Drinking Water Surveillance Program

KITCHENER WELL SUPPLY

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KITCHENER
WELL SUPPLY

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1988

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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

KITCHENER WELL SUPPLY
1988 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 52 plants are being monitored.

The Kitchener Well Supply source consists of many wells. Three locations were sampled on the DWSP; K70, an induced infiltration system located on the east side of Kitchener adjacent to the Grand River, K21 (Mannheim East/West), a high capacity overburden well field located at the western city limit of Kitchener, and Strange Street one of the first well fields developed in Kitchener located near the city-centre.

Samples were taken of raw and treated water from the K70 well, raw water from the K21 well and treated water from the Mannheim Reservoir, treated water from the Strange Street well and water from one house in the distribution system. The Kitchener Well Supply was sampled for approximately 160 parameters monthly. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polynuclear Aromatic Hydrocarbons, Specific Pesticides and Volatiles). Chlorophenols and Specific Pesticides were analysed in June and November only.

A summary of results is shown in Table 1.

The Ontario Drinking Water Objective for Lead in drinking water (50 ug/L) was exceeded in one treated water sample from the Mannheim reservoir at a level of 68 ug/L. The District Officer was notified. All other Inorganic and Physical parameters were below any applicable health related ODWOs.

Of a total of approximately 110 Organic parameters tested for on a monthly basis, none exceeded health related guidelines.

While the parameters measured on DWSP may have indicated good water quality, the water produced cannot be considered to be satisfactory until a treatment process appropriate to the source of the supply is applied (see ODWOs revised 1983 p7).

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE BY SCAN (1988)

SCAN	K21 RAW			MANNHEIM RESERVOIR			SITE 1			STRANGE ST RESERVOIR			K70 RAW			K70 TREATED		
	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	44	4	9	44	7	15	49	14	28	44	7	15	44	10	22	44	8	18
CHEMISTRY (FLD)	24	24	100	40	40	100	59	59	100	49	49	100	24	24	100	59	59	100
CHEMISTRY (LAB)	235	160	68	245	156	63	422	355	84	246	182	73	246	188	76	245	193	78
METALS	288	131	45	288	139	48	564	304	53	288	160	55	288	138	47	288	145	50
CHLOROAROMATICS	168	0	0	168	0	0	154	0	0	154	0	0	168	0	0	168	0	0
CHLOROPHENOLS	12	0	0	12	0	0	.	.	.	6	0	0	12	0	0	12	0	0
PAH	204	0	0	204	0	0	.	.	.	204	3	1	187	0	0	187	0	0
PESTICIDES & PCB	396	0	0	383	0	0	375	0	0	351	0	0	395	0	0	395	0	0
PHENOLICS	12	0	0	12	0	0	.	.	.	11	0	0	12	0	0	12	1	8
SPECIFIC PESTICIDES	44	0	0	56	0	0	0	0	0	50	0	0	51	0	0	57	0	0
VOLATILES	316	0	0	316	14	4	316	8	2	315	49	15	316	1	0	316	32	10
TOTAL	1743	319		1768	356		1939	740		1718	450		1743	361		1783	438	

THE ODWO FOR LEAD(50UG/L) WAS EXCEEDEDIN ONE TREATED WATER SAMPLE NO OTHER GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

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INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 52 plants are being monitored.

The DWSP was initiated in Kitchener in the spring of 1987. An annual report was published for 1987 (ISSN 0840-5190).

This report contains information and results for 1988.

PLANT DESCRIPTION

The Kitchener Well Supply source consists of many wells. Three locations were sampled on the DWSP; K70, an induced infiltration system located on the east side of Kitchener adjacent to the Grand River, K21 (Mannheim East/West), a high capacity overburden well field located at the western city limit of Kitchener, and Strange Street one of the first well fields developed in Kitchener located

near the city-centre.

The K21 (Mannheim East/West) has flows for day of sampling ranging from 31.9 x 1000 m^3/day to 60 x 1000 m^3/day; K70 (Recharge well) has flows on day of sampling ranging from 2.4 x 1000 m^3/day to 3 x 1000 m^3/day; the Strange Street well has flows ranging from 5.8 x 1000 m^3/day to 13.9 x 1000 m^3/day. These three wells are disinfected with chlorine.

The Kitchener Well Supply serves a population of approximately 144,000 people.

The sample location is shown in Figure 1. General information is presented in Table 2.

METHODS

Water samples were obtained from five DWSP approved locations;

i) Raw K70 - The water originated from the pump suction line prior to chlorination and was sampled through a copper sample line. The sample tap is located at the pump.

ii) Treated K70 - The water originated from the pump discharge following chlorination and was sampled through a copper sample line. The sample tap is located at the pump.

iii) Raw K21 (Mannheim East/West) - The water originated from the pump discharge and was sampled through a copper sample line. The sample tap is located at the pump.

iv) Mannheim Reservoir - The water originated from the highlift pump discharge and was sampled through a copper sample line. The sample tap is located near the pump in the reservoir building.

v) Treated Strange Street Reservoir - The water originated from the highlift discharge and was sampled through a copper sample line. The tap is located at the highlift pump.

Sample lines in the plant were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

Stringent DWSP sampling protocols were followed to ensure that all samples were taken in a uniform manner.

Sample day flow, chlorine dosages and field measurements such as Chlorine Residuals, pH and Temperature were recorded on the day of sampling and were entered onto the DWSP data base as submitted.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

KITCHENER WELL SUPPLY SYSTEM

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

KITCHENER WELL SUPPLY

LOCATION:	REGIONAL MUNICIPALITY OF WATERLOO C/O MARSLAND CENTER 20 ERB STREET WEST WATERLOO, ONTARIO N2J 4G7
SOURCE:	GROUNDWATER
DESIGN CAPACITY:	100 X 1000 M^3/DAY
OPERATION:	MUNICIPALITY
SYSTEM MANAGER:	R. MACDONALD
MINISTRY REGION:	WEST CENTRAL
DISTRICT OFFICER:	D.R. IRELAND

MUNICIPALITY SERVED	POPULATION
KITCHENER/WATERLOO	144,000

RESULTS

The K21 well was sampled for raw water and the Mannheim reservoir for treated water, the K70 recharge well was sampled for raw and treated water, the Strange Street well was sampled for treated water only at the reservoir. The Kitchener Well Supply locations were sampled for approximately 160 parameters on a monthly basis. The Specific Pesticides and Chlorophenols scans were sampled in June and November only. As a result of an unforeseen emergency the laboratory capacity was exceeded and analysis for volatiles could not be carried out when the samples were received. Since analysis for volatiles is no longer valid after four weeks of storage, volatile results for February are not available.

Table 3 contains information on the sample day retention time, flow rate and chlorine dosages.

Table 4 is a summary break-down of the number of water samples analysed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it

cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analysed in the DWSP.

Associated guidelines and detection limits are also supplied on tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters, these are currently under review. When an ODWO is not available guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS) recently published (ISBN 0-7729-4461-X) by the MOE catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Although some of the parameters measured on DWSP may be present in the raw and treated water as a result of pollution, many of the

compounds detected are naturally occurring or are treatment by-products.

Plant operational personnel address occurrences of taste and odour or biological water quality parameters. The DWSP does not assess these aspects of the water supply.

As stated under Results, traces do not indicate quantifiable results as defined by established MOE laboratory analytical reporting protocols. While they can be useful in trend analysis or confirmation of the presence of a specific contaminant that is repeatedly detected at these levels, the occasional finding of a trace level of a contaminant is not considered to be significant. **DISCUSSION OF GUIDELINES AND LIMITS THEREFORE, IS ONLY CONDUCTED ON POSITIVE RESULTS.**

Bacteriology

Positive results for the Bacteriology scan were present eight times in the treated K70 water, seven times in the treated Mannheim Reservoir water, seven times in the Strange Street Reservoir water and fourteen times in the Site 1 water. The positive parameters were Standard Plate Count, Total Coliform and/or Total Coliform Background and P/A bottle.

Coliforms were determined to be present in the July Site 1 water

as the result of a positive Presence/Absence test. Coliforms were not detected by the membrane filtration test.

Guidelines for bacteriological sampling and testing of a supply are developed to maintain a proper supervision of its bacteriological quality; the routine monitoring program usually requires the taking of multiple samples in a given system. Full interpretation of bacteriological quality cannot be made on the basis of single samples. Further, bacteriological limits were developed in acknowledgement that the presence of coliforms may be detected due to their non-uniform distribution throughout the distribution system and the fact that their enumeration is subject to considerable variation. For these reasons, the occasional finding of low numbers of coliform organisms is not unexpected. Routine bacteriological monitoring, as outlined in the ODWOs is carried out by the operating authority and results have indicated that the Kitchener well supply has experienced intermittent bacteriological contamination.

Inorganic and Physical

Laboratory and Field Chemistry

The results for the Laboratory Chemistry and Field Chemistry scans were below all applicable health related ODWOs.

There are ODWOs that are set for parameters which are related to

aesthetic quality rather than health.

Colour values exceeded the aesthetic ODWO of 5 True Colour Units (TCU) in two treated water samples from the K70 well. Colour in drinking water may be due to the presence of natural or synthetic organic substances as well as certain metallic ions.

The ODWO indicates that a hardness level of between 80 and 100 mg/L as calcium carbonate for domestic waters, provides an acceptable balance between corrosion and incrustation. Water supplies with a hardness greater than 200 mg/L are considered poor and would possess a tendency to form scale deposits and result in excessive soap consumption. All three sources of water sampled contained hardness values above 200 mg/L, ranging from 254 to 538 mg/L as CaCO3.

Some European Economic Community (EEC) guidelines for parameters related to hardness ie. Conductivity (400 uMHO/cm) and Calcium (100 mg/L), were also exceeded in some samples as a result of the high hardness levels. Conductivity values for the K21 (Mannheim) well ranged from 607- 654 umho/cm, K70 well ranged from 576-655 umho/cm, Strange Street reservoir ranged from 921-1067 umho/cm and the Site 1 water ranged from 645-1155 umho/cm. Calcium values were high for the Strange Street reservoir water and the Site 1 water.

The Langelier Index is used extensively in estimating the corrosion

potential of water. An increasingly negative index indicates the increasing possibility of corrosion. It is considered sound engineering practice to maintain a slightly positive Langelier Index. The Langelier Index for the Kitchener wells is consistently high in the positive range.

It is desirable that the Temperature of drinking water be less than 15°C; the palatability of water is enhanced by its coolness. A temperature below 15°C will tend to reduce the growth of nuisance organisms and hence minimize associated taste, colour, odour and corrosion problems. The temperature of the delivered water may increase in the distribution system due to the warming effect of the soil in late summer and fall and/or as a result of higher temperatures in the source water. The desired ODWO was exceeded twice in the treated water from K70 and once in the free flow water in the distribution system.

Metals

The Ontario Drinking Water Objective for Lead in drinking water (50 ug/L) was exceeded in one treated water sample from the Mannheim reservoir at a level of 68 ug/L. The District Officer was notified. All other results reported for the Metals scan were below any applicable health related ODWOs.

Copper levels were higher in the treated water from the K70 well as compared to the raw water indicating that small quantities of

these metals were leached from the copper sample line at the well.

Barium levels were lower in the water from the K70 well than in the water from other sources tested.

Strontium (stable) levels were higher in the K70 and the Strange Street sources than from the Mannheim source.

Higher levels of iron, manganese and zinc were found in the Strange Street reservoir as compared to the other sources.

Elevated levels of Copper, Iron, Lead and Zinc were detected in the standing samples from the distribution system as compared to the free flow samples thus, indicating that these metals were leached from the household plumbing as the water stood overnight. Although the Langelier Index indicates minimal potential for corrosion some metals will be leached in standing samples in most supplies.

The aesthetic ODWO of 50 ug/L for Manganese was exceeded in all of the Strange Street Reservoir samples and in five Site 1 water samples. Manganese, at concentrations greater than 50 ug/L, is objectionable in water supplies because it stains laundry, and may cause and undesirable taste in beverages.

Organic Parameters

Chloroaromatics

The results of the Chloroaromatics scan showed that no Chloroaromatics were detected.

Chlorophenols

The results of the Chlorophenols scan showed that no Chlorophenols were detected.

Pesticides and PCB (Polychlorinated Biphenyl)

The results of the Pesticides and PCB scan showed that no PCBs were detected and that one pesticide was detected:

Atrazine

Atrazine was detected at trace levels, six times in the K70 raw water and six times in the treated water.

Specific Pesticides

Results of the Specific Pesticides scan showed that no Specific Pesticides were detected.

Phenolics

The maximum desirable concentration of phenolic substances in drinking water is 2.0 ug/L. This limit has been set primarily to prevent the occurrence of undesirable tastes and odours,

particularly in chlorinated water. Phenolics were detected at trace levels, six times in the K21 (Mannheim) raw water and seven times in the treated, five times at the Strange Street reservoir, ten times in the K70 raw water and nine times in the treated water. Phenolic compounds are present in the aquatic environment as a result of natural and/or industrial processes.

Polynuclear Aromatic Hydrocarbons (PAH)

The results of the PAH scan showed that three PAHs were detected:

Anthracene

Fluoranthene

Pyrene

Anthracene was reported at 1 ng/L in the February sample from the Strange Street reservoir, Fluoranthene was reported at 20 ng/L in the same sample. Subsequent development of detection limits by laboratory staff for PAHs indicate that these values were at the detection limit.

Pyrene was detected at 40 ng/L in the February water sample from the Strange Street Reservoir. At present no known drinking water guideline exists for this parameter. The United States Environmental Protection Agency's (EPA) Ambient Water Quality (AWQ) guideline for Fluoranthene is 42000 ng/L while the criteria for total PAH is 2.8 ng/L. AWQ guidelines are designed to ensure that the surface water, used as a drinking water source and from which

fish are consumed, does not contain substances at levels that would be hazardous to human health. Since both water and fish consumption are considered, AWQ guidelines are usually more stringent than any corresponding drinking water guideline.

Typically, concentrations of specific PAHs in groundwaters have been found to be 10-50 ng/L. Contact with coal tar based pipe and reservoir coatings may lead to increases in PAH concentrations in the water; and in such cases an increase in the level of fluoranthene is particularly marked.

Volatiles

The results of the Volatiles scan showed that eleven parameters, other than Trihalomethanes(THMs), were detected:

Benzene
Toluene
Ethylbenzene
Meta-Xylene
Ortho-Xylene
Styrene
1,1-Dichloroethane
1,1,1-Trichloroethane
Carbon Tetrachloride
Trichloroethylene
Tetrachloroethylene

treated water from the K21 (Mannheim) well, three times in the Site 1 water, once in the water from the Strange Street reservoir and once in the raw water from the K70 well.

Toluene was detected at trace levels, once in the treated water from the K21 (Mannheim) well, once in the Site 1 water, six times in the Strange Street reservoir water and once in both the raw and treated water from the K70 well. The detection of toluene at low, trace levels is a laboratory artifact derived from the analytical methodology. The purge-and-trap analytical technique depends on the purging of the volatile organics in the water sample with helium gas onto a Tenax trapping column. The volatile materials are subsequently thermally desorbed, separated and quantified. Tenax, a toluene-like polymeric material, tends to decompose sporadically upon heating into toluene and other aromatic componenets (ethylbenzene and xylene) giving instrument blanks in the order of 0.05 ug/L.

The detected trace levels of Styrene are also considered to be laboratory artifacts due to the outgassing of monomeric styrene from the polystyrene shipping containers. The sporadic background levels from this source are in the order of 0.05 ug/L.

Ethylbenzene was detected at trace levels, four times in the raw and treated water from the K21 (Mannheim) well, four times in the Site 1 water, nine times in the water from the Strange Street

reservoir and four times in the raw and treated water from the K70 well.

Meta-Xylene (M-Xylene) was detected at trace levels, nine times in the water from the Strange Street reservoir.

Ortho-Xylene (O-Xylene) was detected at trace levels, nine times in the water from the Strange Street reservoir.

The volatiles listed above are typically found on an occasional basis at other water supplies included on the DWSP usually at trace levels.

1,1 Dichloroethane was detected in the June and September water samples from Site 1 at 1.1 ug/L. At present no known drinking water guideline exists for this parameter. It was also detected at trace levels, four times in the Site 1 water and three times in the water from the Strange Street reservoir.

1,1,1-Trichloroethane was detected in all twelve samples taken from the Strange Street Reservoir. All values, ranging from .96 ug/L to 1.6 ug/L were below the United States Environmental Protection Agency's Maximum Contaminant Level for 1,1,1-Trichloroethane in drinking water of 200 ug/L. It was also detected at trace levels, once in the raw water from the K21 well and four times in the Site 1 water.

Carbon Tetrachloride was detected at trace levels, once in the Site 1 water and once in the treated water from the K70 well.

Trichloroethylene was detected at trace levels in all twelve samples taken from the Strange Street Reservoir.

Tetrachloroethylene (T-Chloroethylene) was detected at trace levels, once in the Strange Street Reservoir water.

THMs are formed from reactions between chlorine and naturally occurring organic compounds. Chloroform and other THMs (chlorodibromomethane, dichlorobromomethane and occasionally bromoform) have been found in water supplies drawn from groundwater sources.

Chloroform, Chlorodibromomethane, Dichlorobromomethane and Total THMs were detected in the treated water samples from all locations. Bromoform was detected occasionally.

All Total THM occurrences, ranging from traces to 36 ug/L, were well below the ODWO of 350 ug/L. The K70 recharge well supply produced higher levels of THMs than either of the other two supplies. This could be due to a higher level of naturally occurring organic matter reflecting the river water origin of the recharge water.

CONCLUSIONS

While the water quality produced by the three well sources may generally have been good, the water cannot be considered to be satisfactory until a treatment process appropriate to the source of the supply is applied (see ODWOs revised 1983 p7). The current MOE policy requires all groundwater supplies to receive chlorination treatment and some wells (other than the three monitored) supplying the Kitchener-Waterloo do not chlorinate.

The repeated finding of quantifiable levels of 1,1,1-Trichloroethane and traces of Trichloroethylene in the Strange Street Reservoir indicates contamination of the reservoir through one or more of its source wells.

No health related drinking water guidelines, for organic or inorganic parameters, were exceeded during 1987 or 1988.

RECOMMENDATIONS

Two recommendations can be made:

1) The source of contamination at the Strange Street Reservoir should be investigated.

2) Effective and appropriate treatment should be provided to ensure safety and consistency in the quality of all waters.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

DATE	SAMPLE DAY CONDITIONS		TREATMENT CHEMICAL DOSAGES (MG/L)					
	K21 (MANNHEIM) RETENTION TIME(HRS)	FLOW (1000M3)	PRE-CHLORINATION SODIUM HYPOCHLORITE	K70 RECHARGE WELL RETENTION TIME(HRS)	FLOW (1000M3)	PRE-CHLORINATION SODIUM HYPOCHLORITE	STRANGE ST RESERVOIR RETENTION TIME(HRS)	FLOW (1000M3)	PRE-CHLORINATION SODIUM HYPOCHLORITE
JAN 19	.5	35.6	01.01	.2	3.0	00.63	.	7.8	.
FEB 23	.3	42.1	01.01	.2	2.9	00.60	.	8.6	.
MAR 22	.4	48.7	01.01	.2	2.4	00.54	.	13.9	.
APR 19	.5	53.7	00.97	.3	2.4	00.63	.	8.6	.
MAY 10	.5	60.0	01.07	.3	2.5	00.51	.	8.6	.
JUN 21	.3	45.4	01.01	.3	2.8	00.51	.	10.0	.
JUL 19	.5	35.5	01.14	.3	3.0	00.63	.	5.8	.
AUG 23	.5	31.9	01.07	.2	2.8	00.57	.	10.0	.
SEP 20	.6	35.4	01.20	.3	2.7	00.57	.	10.6	.
OCT 18	.3	35.4	01.14	.4	2.7	00.60	.	10.4	.
NOV 22	.4	33.3	01.07	.5	2.7	00.63	.	13.6	.
DEC 13	.3	32.6	00.97	.3	2.7	00.60	.	9.1	.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	K70 RAW			K70 TREATED			STRAIGE ST RESERVOIR			K21 RAW			HANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
BACTERIOLOGICAL	AEROMONAS SP	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	0	0
	E. COLI P/A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	0	0
	FECAL COLIFORM MF	12	0	0	.	.	.	.	.	.	12	0	0	.	.	.	.	.	.
	FECAL COLIFORM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	0	0
	STANDRD PLATE CNT MF	8	7	0	12	6	0	12	6	0	8	4	0	12	5	0	12	5	0
	P/A BOTTLE	.	.	.	8	0	0	8	0	0	.	.	.	8	0	0	8	1	0
	STAPH AUREUS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	0	0
	COLIFORM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	0
	TOTAL COLIFORM MF	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	T COLIFORM BCKGRD MF	12	3	0	12	2	0	12	1	0	12	0	0	12	2	0	12	7	0
*TOTAL SCAN BACTERIOLOGICAL		44	10	0	44	8	0	44	7	0	44	4	0	44	7	0	49	14	0
*TOTAL GROUP BACTERIOLOGICAL		44	10	0	44	8	0	44	7	0	44	4	0	44	7	0	49	14	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	.	.	.	11	11	0	7	7	0	.	.	.	2	2	0	1	1	0
	FLD CHLORINE FREE	.	.	.	12	12	0	6	6	0	.	.	.	2	2	0	2	2	0
	FLD CHLORINE (TOTAL)	.	.	.	12	12	0	12	12	0	.	.	.	12	12	0	8	8	0
	FLD PH	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	FLD TEMPERATURE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
*TOTAL SCAN CHEMISTRY (FLD)		24	24	0	59	59	0	49	49	0	24	24	0	40	40	0	59	59	0
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	12	12	0	11	11	0	12	12	0	23	23	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

		SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HAMMHEIN RESERVOIR			SITE 1		
SCAN	PARAMETER	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHEMISTRY (LAB)	CALCIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	CYANIDE	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0	12	0	0
	CHLORIDE	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	COLOUR	12	12	0	12	11	1	12	7	5	11	0	7	12	0	4	24	12	11
	CONDUCTIVITY	12	12	0	12	12	0	12	12	0	11	11	0	12	12	0	23	23	0
	FLUORIDE	12	12	0	12	12	0	12	12	0	12	12	0	12	11	1	24	24	0
	HARDNESS	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	IONCAL	12	6	0	12	6	0	12	6	0	12	5	0	12	6	0	24	12	0
	LANGELIERS INDEX	12	12	0	12	12	0	12	12	0	11	11	0	12	12	0	23	23	0
	MAGNESIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	SODIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	AMMONIUM TOTAL	12	8	3	12	10	1	12	7	4	11	5	5	12	5	6	23	12	9
	NITRITE	12	4	8	12	2	9	12	2	10	11	11	0	12	1	9	24	9	14
	TOTAL NITRATES	12	12	0	12	12	0	12	12	0	11	11	0	12	12	0	22	22	0
	NITROGEN TOT KJELD	12	12	0	12	12	0	12	5	7	12	0	10	12	2	10	23	18	5
	PH	12	12	0	12	12	0	12	12	0	11	11	0	12	12	0	23	23	0
	PHOSPHORUS FIL REACT	12	3	9	11	10	1	12	5	7	11	2	8	12	0	10	.	.	.
	PHOSPHORUS TOTAL	12	0	10	12	0	9	12	0	9	12	0	3	12	0	4	.	.	.
	SULPHATE	6	6	0	6	6	0	6	6	0	6	6	0	6	6	0	12	12	0
	TURBIDITY	12	5	7	12	4	8	12	12	0	10	4	6	11	5	6	22	22	0
*TOTAL SCAN CHEMISTRY (LAB)		246	188	37	245	193	29	244	182	42	235	160	39	245	156	50	422	355	39
METALS	SILVER	12	0	6	12	0	7	12	0	6	12	0	7	12	0	5	24	0	9

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS	ALUMINUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	ARSENIC	12	0	11	12	0	8	12	6	5	12	0	9	12	0	10	24	8	14
	BARIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	BORON	12	8	4	12	8	4	12	12	0	12	5	7	12	5	7	24	19	5
	BERYLLIUM	12	0	6	12	0	8	12	0	5	12	0	7	12	0	7	24	0	18
	CADMIUM	12	0	8	12	0	7	12	0	9	12	0	2	12	0	4	24	0	9
	COBALT	12	0	12	12	0	12	12	0	12	12	0	11	12	0	10	24	0	20
	CHROMIUM	12	7	5	12	6	5	12	5	3	12	6	3	12	6	5	24	14	9
	COPPER	12	12	0	12	12	0	12	12	0	12	10	2	12	12	0	24	23	1
	IRON	12	0	5	12	0	5	12	12	0	12	0	8	12	0	5	24	17	6
	MERCURY	12	4	3	12	4	3	12	4	2	12	4	2	12	4	2	12	4	2
	MANGANESE	12	12	0	12	11	1	12	12	0	12	12	0	12	12	0	24	23	0
	MOLYBDENUM	12	12	0	12	12	0	12	11	1	12	12	0	12	11	1	24	18	6
	NICKEL	12	3	6	12	4	5	12	4	3	12	2	3	12	1	5	24	11	8
	LEAD	12	4	8	12	12	0	12	5	7	12	4	8	12	12	0	24	13	10
	ANTIMONY	12	4	8	12	4	8	12	4	8	12	4	6	12	4	6	24	8	13
	SELENIUM	12	0	10	12	0	8	12	0	11	12	0	8	12	0	7	24	0	19
	STRONTIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	TITANIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	THALLIUM	12	0	9	12	0	10	12	0	11	12	0	10	12	0	7	24	0	8
	URANIUM	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
	VANADIUM	12	0	12	12	0	12	12	1	10	12	0	12	12	0	12	24	2	17
	ZINC	12	12	0	12	12	0	12	12	0	12	12	0	12	12	0	24	24	0
*TOTAL SCAN METALS		288	138	113	288	145	103	288	160	93	288	131	105	288	139	93	564	304	169
*TOTAL GROUP INORGANIC & PHYSICAL		558	350	150	592	397	132	583	391	135	547	315	144	573	335	143	1045	718	208

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED		STRANGE ST RESERVOIR		K21 RAW		HANNHEIN RESERVOIR		SITE 1	
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHLOROAROMATICS	HEXACHLOROBUTADIENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	123 TRICHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	1234 T-CHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	1235 T-CHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	124 TRICHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	1245 T-CHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	135 TRICHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	HCB	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	HEXACHLOROETHANE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	OCTACHLOROSTYRENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	PENTACHLOROBENZENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	236 TRICHLOROTOLUENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	245 TRICHLOROTOLUENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
	26A TRICHLOROTOLUENE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0
*TOTAL SCAN CHLOROAROMATICS		168	0	0	168	0	0	154	0	0	168	0	0	168	0	0	154	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	2345 T-CHLOROPHENOL	2	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	2356 T-CHLOROPHENOL	2	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	245-TRICHLOROPHENOL	2	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	246-TRICHLOROPHENOL	2	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	PENTACHLOROPHENOL	2	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
		TOTAL	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
*TOTAL SCAN CHLOROPHENOLS		12	0	0	12	0	0	6	0	0	12	0	0	12	0	0	0	0	0	
PAH	PHENANTHRENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	ANTHRACENE	11	0	0	11	0	0	12	1	0	12	0	0	12	0	0	.	.	.	
	FLUORANTHENE	11	0	0	11	0	0	12	1	0	12	0	0	12	0	0	.	.	.	
	PYRENE	11	0	0	11	0	0	12	1	0	12	0	0	12	0	0	.	.	.	
	BENZO(A)ANTHRACENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	CHRYSENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	DIMETH. BENZ(A)ANTHR	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	BENZO(E) PYRENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	BENZO(J) FLUORANTHEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	
	BENZO(B) FLUORANTHEN	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	PERYLENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	BENZO(K) FLUORANTHEN	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	BENZO(A) PYRENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	BENZO(G,H,I) PERYLEN	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	DIBENZO(A,H) ANTHRAC	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	INDENO(1,2,3-C,D) PY	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	BENZO(B) CHRYSENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
	ANTHANTHRENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.	
	CORONENE	11	0	0	11	0	0	12	0	0	12	0	0	12	0	0	.	.	.	
*TOTAL SCAN PAH		187	0	0	187	0	0	204	3	0	204	0	0	204	0	0	0	0	0	

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DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR				K21 RAW			HANNHEIN RESERVOIR				SITE 1	
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	ALDRIN	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	ALPHA BHC	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	BETA BHC	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	LINDANE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	ALPHA CHLORDANE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	GAMMA CHLORDANE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	DIELDRIN	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	METHOXYCHLOR	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	ENDOSULFAN I	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	ENDOSULFAN II	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	ENDRIN	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	ENDOSULFAN SULPHATE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	HEPTACHLOR EPOXIDE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	HEPTACHLOR	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	MIREX	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	OXYCHLORDANE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	OPDDT	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	PCB	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	DDD	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	PPDDE	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	PPDDT	12	0	0	12	0	0	11	0	0	12	0	0	12	0	0	11	0	0			
	AMETRINE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0			
	ATRAZINE	11	0	6	11	0	6	10	0	0	12	0	0	11	0	0	12	0	0			
	ATRATONE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0			

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANHNEIM RESERVOIR			SITE 1		
		TOTAL	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	CYANAZINE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	DES ETHYL ATRAZINE	6	0	0	6	0	0	5	0	0	6	0	0	5	0	0	6	0	0	
	DES ETHYL SIMAZINE	6	0	0	6	0	0	5	0	0	6	0	0	5	0	0	6	0	0	
	PROMETONE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	PROPAZINE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	PROMETRYNE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	METRIBUZIN	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	SIMAZINE	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	ALACHLOR	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
	METOLACHLOR	12	0	0	12	0	0	10	0	0	12	0	0	11	0	0	12	0	0	
*TOTAL SCAN PESTICIDES & PCB		395	0	6	395	0	6	351	0	0	396	0	0	383	0	0	375	0	0	
PHENOLICS	PHENOLICS	12	0	10	12	1	8	11	0	5	12	0	6	12	0	7	.	.	.	
*TOTAL SCAN PHENOLICS		12	0	10	12	1	8	11	0	5	12	0	6	12	0	7	0	0	0	
SPECIFIC PESTICIDES	TOXAPHENE	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2,4,5-T	1	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.	
	2,4-D	1	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.	
	2,4-DB	1	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.	
	2,4 D PROPIONIC ACID	1	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.	

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
SPECIFIC PESTICIDES	DICAMBA	1	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	PICHLORAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	SILVEX	1	0	0	2	0	0	1	0	0	2	0	0	2	0	0	.	.	.
	DIAZINON	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	DICHLOROVOS	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	CHLORPYRIFOS	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	ETHION	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	AZINPHOS-METHYL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	MALATHION	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	MEVINPHOS	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	METHYL PARATHION	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	METHYLTRITHION	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	PARATHION	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	PHORATE	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	RELDAN	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	RONNEL	2	0	0	2	0	0	2	0	0	1	0	0	2	0	0	.	.	.
	AMINOCARB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	.	.
	[illegible]ONYL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	BUX	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	CARBOFURAN	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	CICP	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	DIALLATE	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	EPTAM	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	IPC	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.

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DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW			K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			MANNHEIM RESERVOIR			SITE 1		
		TOTAL	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
SPECIFIC PESTICIDES	PROPOXUR	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	CARBARYL	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
	BUTYLATE	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	.	.	.
*TOTAL SCAN SPECIFIC PESTICIDES		51	0	0	57	0	0	50	0	0	44	0	0	56	0	0	0	0	0
VOLATILES	BENZENE	11	0	1	11	0	0	11	0	1	11	0	1	11	0	1	11	0	3
	TOLUENE	11	0	1	11	0	1	11	1	5	11	0	0	11	0	1	11	0	1
	ETHYLBENZENE	11	0	4	11	0	4	11	0	9	11	0	4	11	0	4	11	0	4
	P-XYLENE	11	0	0	11	0	0	10	0	0	11	0	0	11	0	0	11	0	0
	M-XYLENE	11	0	0	11	0	0	11	0	9	11	0	0	11	0	0	11	0	0
	O-XYLENE	11	0	0	11	0	0	11	0	9	11	0	0	11	0	0	11	0	0
	STYRENE	3	0	3	3	1	2	3	0	1	3	0	2	3	1	2	3	0	3
	1,1 DICHLOROETHYLENE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	METHYLENE CHLORIDE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	T1,2DICHLOROETHYLENE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	1,1 DICHLOROETHANE	11	0	0	11	0	0	11	0	3	11	0	0	11	0	0	11	2	4
	CHLOROFORM	11	0	4	11	10	0	11	3	8	11	0	2	11	0	8	11	1	9
	111, TRICHLOROETHANE	11	0	0	11	0	0	11	11	0	11	0	1	11	0	0	11	0	4
	1,2 DICHLOROETHANE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	CARBON TETRACHLORIDE	11	0	0	11	0	1	11	0	0	11	0	0	11	0	0	11	0	1
	1,2 DICHLOROPROPANE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	TRICHLOROETHYLENE	11	0	0	11	0	0	11	0	11	11	0	0	11	0	0	11	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE	K70 RAW		K70 TREATED			STRANGE ST RESERVOIR			K21 RAW			HANNHEIN RESERVOIR			SITE 1		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	DICHLOROBROMOMETHANE	11	0	2	11	8	2	11	11	0	11	0	0	11	5	6	11	2	7
	112 TRICHLOROETHANE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	CHLORODIBROMOMETHANE	11	0	2	11	5	3	11	11	0	11	0	0	11	6	5	11	1	9
	T-CHLOROETHYLENE	11	0	0	11	0	0	11	0	1	11	0	0	11	0	0	11	0	0
	BROMOFORM	11	0	0	11	0	1	11	4	7	11	0	0	11	0	11	11	0	6
	1122 T-CHLOROETHANE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	CHLOROBENZENE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	1,4 DICHLOROBENZENE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	1,3 DICHLOROBENZENE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	1,2 DICHLOROBENZENE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	TRIFLUOROCHLOROTOLUE	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0	0
	ETHLYENE DIBROMIDE	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0	11	0	0
	TOTL TRIHALOMETHANES	11	1	1	11	8	2	11	8	3	11	0	0	11	2	9	11	2	7
*TOTAL SCAN VOLATILES		316	1	18	316	32	16	315	49	67	316	0	10	316	14	47	316	8	58
*TOTAL GROUP ORGANIC		1141	1	34	1147	33	30	1091	52	72	1152	0	16	1151	14	54	845	8	58
TOTAL		1743	361	184	1783	438	162	1718	450	207	1743	319	160	1768	356	197	1939	740	266

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)

1. Maximum Acceptable Concentration (MAC)

1+. MAC for Total Trihalomethanes

1*. MAC for Bacteriological Analyses
Poor water quality is indicated when :
- total coliform counts > 0 < 5
- P/A Bottle Test is present after 48 hours
- Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
- Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
- Standard Plate Count should not exceed 500 organisms per ml at 35 ^{0}C within 48 hours

2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA (H&W)

1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO) (for xylenes, the AO is a total)

C WORLD HEALTH ORGANIZATION (WHO)

1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)

1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria

F EUROPEAN ECONOMIC COMMUNITY (EEC)

1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!AW	No Data: Analysis Withdrawn
!CR	No Data: Could Not Confirm By Reanalysis
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only

PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours
T# (T06)	Result Taken After # Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

TYPE	K21 RAW	HAMMHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
			STANDING	FREE FLOW			
BACTERIOLOGICAL							
AEROMONAS SP (1=PRESNT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)			
JUL	.	.	.	0	.	.	.
E. COLI P/A (1=PRESNT)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JUL	.	.	.	0	.	.	.
FECAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 0 (A1)			
JAN	0	.	.	.	.	0	.
FEB	0	.	.	.	.	0	.
MAR	0	.	.	.	.	0	.
APR	0	.	.	.	.	0	.
MAY	0	.	.	.	.	0	.
JUN	0	.	.	.	.	0	.
JUL	0	.	.	.	.	0	.
AUG	BDL	.	.	.	.	BDL	.
SEP	0 T06	.	.	.	.	0 T06	.
OCT	0 T24	.	.	.	.	0 T24	.
NOV	0 T06	.	.	.	.	0 T06	.
DEC	0 T24	.	.	.	.	0 T24	.
FECAL COLIFORM (1=PRESNT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)			
JUL	.	.	.	0	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HAMMHEIN RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
STANDRD PLATE CNT MF (CT/ML)		DET'N LIMIT = 0		GUIDELINE = 500/ML (A1)			
JAN	0	0	.	0	3	1	2
FEB	2	1	.	3	1	0	1
MAR	0	0	.	3	0	4	56
APR	0	0	.	1	0	2	0
MAY	2	4	.	0	3	2	5
JUN	1	2	.	2	3	5	0
JUL	0	1	.	0	1	4	3
AUG	1	1	.	2	8	4	220
SEP	.	1 <=>	.	4 <=>	5 <=>	.	5 <=>
OCT	.	3 <=>	.	2 <=>	1 <=>	.	2 <=>
NOV	.	3 <=>	.	4 <=>	4 <=>	.	1 <=>
DEC	.	2 <=>	.	5 <=>	6 <=>	.	1 <=>
P/A BOTTLE (1=PRESNT)		DET'N LIMIT = 0		GUIDELINE = 0 (A1*)			
JAN	.	0	.	0	0	.	0
FEB	.	0	.	0	0	.	0
MAR	.	0	.	0	0	.	0
APR	.	0	.	0	0	.	0
MAY	.	0	.	0	0	.	0
JUN	.	0	.	0	0	.	0
JUL	.	0	.	1	0	.	0
AUG	.	0	.	0	0	.	0
STAPH AUREUS (1=PRESNT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)			
JUL	.	.	.	0	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
COLIFORM (1=PRESNT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)			
JAN	.	.	.	1	.	.	.
TOTAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 5/100ML(A1)			
JAN	0	0	.	0	0	0	0
FEB	0	0	.	0	0	0	0
MAR	0	0	.	0	0	0	0
APR	0	0	.	0	0	0	0
MAY	0	0	.	0	0	0	0
JUN	BDL	0	.	0	0	BDL	0
JUL	0	0	.	0	0	0	0
AUG	BDL	0	.	0	0	BDL	0
SEP	BDL	0 T06	.	0 T06	0 T06	BDL	0 T06
OCT	0 T24	0 T24	.	0 T24	0 T24	0 T24	0 T24
NOV	0 T06	0 T06	.	0 T06	0 T06	0 T06	0 T06
DEC	0 T24	0 T24	.	0 T24	0 T24	0 T24	0 T24
T COLIFORM RECORD MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = N/A			
JAN	0	0	.	0	0	0	0
FEB	0	0	.	1	0	0	0
MAR	0	3	.	0	0	0	0
APR	0	0	.	2	0	3	0
MAY	0	0	.	5	0	0	3
JUN	BDL	0	.	2	0	6	0
JUL	0	0	.	0	0	0	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
AUG	BDL	0	0	3	BDL	2400 >
SEP	BDL	0 T06	1 T06	0 T06	2 T06	0 T06
OCT	0 T24	1 T24	2 T24	0 T24	0 T24	0 T24
NOV	0 T06	0 T06	21 T06	0 T06	0 T06	0 T06
DEC	0 T24	0 T24	0 T24	0 T24	0 T24	0 T24

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	RAMMHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
CHEMISTRY (FLD)						
FLD CHLORINE (COMB) (MG/L)		DET'N LIMIT = N/A	GUIDELINE = N/A			
JAN	.	.	.	.	.	.200
FEB	.	.100	.100	.100	.	.300
MAR	.	.	.	.	.	.100
APR	.	.	.	.200	.	.200
MAY	.	.	.	.100	.	.200
JUL	.	.	.	.	.	.200
AUG	.	.	.	.	.	.300
SEP	.	.100	.	.100	.	.400
OCT	.	.	.	.100	.	.300
NOV	.	.	.	.100	.	.100
DEC	.	.	.	.100	.	.100
FLD CHLORINE FREE (MG/L)		DET'N LIMIT = N/A	GUIDELINE = N/A			
JAN	.	.	.	.	.	.100
FEB	.	.	.	.	.	.300
MAR	.	.100	.100	.	.	.700
APR	.	.	.	.100	.	.500
MAY	.	.	.	.	.	.400
JUN	.	.100	.100	.100	.	.300
JUL	.	.	.	.	.	.300
AUG	.	.	.	.	.	.200
SEP	.	.	.	.200	.	.100
OCT	.	.	.	.100	.	.300
NOV	.	.	.	.100	.	.400

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
DEC	.	.	.	.	.100	.	.500
FLD CHLORINE (TOTAL) (MG/L)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	.	.100	.100	.100	.100	.	.300
FEB	.	.100	.	.100	.100	.	.400
MAR	.	.100	.	.100	.100	.	.800
APR	.	.100	.	.100	.300	.	.700
MAY	.	.100	.	.100	.100	.	.600
JUN	.	.100	.	.100	.100	.	.300
JUL	.	.100	.	.100	.100	.	.500
AUG	.	.100	.	.	.100	.	.500
SEP	.	.100	.	.	.300	.	.500
OCT	.	.100	.	.	.200	.	.600
NOV	.	.100	.	.	.200	.	.500
DEC	.	.100	.	.	.200	.	.600
FLD PH (DIMENSIONLESS)		DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)			
JAN	7.500	7.500	7.400	7.500	7.100	7.500	7.500
FEB	7.500	7.500	7.500	7.500	7.100	7.500	7.400
MAR	7.500	7.500	7.500	7.500	7.300	7.300	7.500
APR	7.300	7.500	7.500	7.300	7.300	7.500	7.500
MAY	7.300	7.500	7.400	7.500	7.300	7.500	7.500
JUN	7.300	7.500	7.500	7.300	7.100	7.500	7.500
JUL	7.400	7.500	7.700	7.500	7.100	7.400	7.500
AUG	7.300	7.500	7.600	7.500	7.100	7.500	7.500

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
SEP	7.300	7.400	7.300	7.300	7.100	7.500	7.500
OCT	7.300	7.400	7.400	7.300	7.100	7.500	7.500
NOV	7.300	7.400	7.500	7.400	7.100	7.500	7.500
DEC	7.500	7.500	7.500	7.400	7.300	7.500	7.500
FLD TEMPERATURE (DEG.C)		DET'N LIMIT = N/A		GUIDELINE = 15 (A1)			
JAN	9.000	8.000	16.000	9.000	9.000	8.000	7.000
FEB	8.000	8.000	15.000	14.000	9.000	7.000	6.000
MAR	8.000	8.000	13.000	8.000	8.000	6.000	5.000
APR	8.000	8.000	16.000	9.000	9.900	6.000	6.000
MAY	9.000	8.000	15.000	9.000	10.000	7.000	8.000
JUN	9.000	9.000	16.000	12.000	10.000	11.000	11.000
JUL	8.000	9.000	18.000	14.000	10.000	14.000	15.000
AUG	8.000	9.000	20.000	16.000	10.000	16.000	16.000
SEP	9.000	9.000	18.000	12.000	10.000	16.000	16.000
OCT	9.000	9.000	18.000	8.000	9.000	15.000	15.000
NOV	9.000	8.000	18.000	13.000	9.000	12.000	11.000
DEC	9.000	8.000	17.000	11.000	8.500	11.000	10.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
CHEMISTRY (LAB)						
ALKALINITY (MG/L)		DET'N LIMIT = .200	GUIDELINE = 30-500 (A4)			
JAN	239.100	260.200	308.700	255.300	311.500	227.000	227.000
FEB	273.300	267.100	285.200	ICE	323.500	227.200	229.500
MAR	276.600	266.800	328.200	316.000	328.000	227.800	229.100
APR	280.600	257.400	290.200	292.400	302.700	231.000	234.900
MAY	282.200	275.100	311.200	322.200	337.800	233.200	233.500
JUN	265.400	262.400	294.200	285.000	323.900	228.800	228.100
JUL	IUR	269.100	278.600	269.900	335.700	215.300	215.900
AUG	279.500	268.900	268.700	267.600	330.100	214.400	214.300
SEP	274.000	267.200	318.900	323.100	335.800	212.600	213.400
OCT	281.600	276.100	316.700	314.600	338.600	213.900	213.800
NOV	279.900	267.100	326.000	285.200	333.900	222.000	221.900
DEC	282.100	270.200	326.200	288.200	332.700	227.400	227.700
CALCIUM (MG/L)		DET'N LIMIT = .100	GUIDELINE = 100 (F2)			
JAN	86.800	90.200	136.000	93.600	128.000	84.000	82.600
FEB	89.400	93.800	109.000	111.000	127.000	78.800	78.000
MAR	89.200	95.000	143.000	142.000	131.000	79.200	79.800
APR	91.800	90.000	138.000	137.000	124.000	78.600	76.200
MAY	87.800	92.400	142.000	137.000	131.000	73.600	73.800
JUN	65.800	75.800	110.000	109.000	108.000	74.400	73.800
JUL	87.200	87.000	96.800	80.600	116.000	70.600	69.200
AUG	86.800	94.800	95.000	91.200	134.000	70.400	70.200
SEP	90.200	95.000	147.000	143.000	129.000	72.400	71.800
OCT	78.400	87.600	140.000	134.000	127.000	70.400	69.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HANNHEIM RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
NOV	86.800	89.200	145.000	106.000	134.000	75.600	74.800
DEC	83.000	84.800	133.000	99.600	120.000	77.600	77.200
CHLORIDE (MG/L)		DET'N LIMIT = .200		GUIDELINE = 250 (A3)			
JAN	15.700	19.000	90.000	22.200	81.800	34.300	34.800
FEB	16.100	19.700	48.200	51.000	82.900	36.100	36.200
MAR	15.900	20.000	105.000	95.900	80.000	34.800	34.300
APR	15.900	19.600	97.300	99.100	78.100	26.600	26.400
MAY	15.800	20.400	89.200	88.500	88.800	29.600	30.000
JUN	15.100	19.100	103.000	100.000	87.600	32.200	32.100
JUL	16.000	18.500	28.200	18.600	89.000	34.100	34.800
AUG	15.700	18.500	18.400	18.400	89.400	35.600	35.900
SEP	16.000	19.600	98.100	97.800	89.600	38.200	38.500
OCT	15.800	19.100	93.000	86.200	86.500	35.100	35.800
NOV	16.000	18.200	96.400	43.100	90.400	32.600	33.300
DEC	16.100	19.200	108.000	45.300	89.000	29.300	31.500
COLOUR (HZU)		DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)			
JAN	BDL	BDL	1.500 <T	BDL	2.000 <T	4.000	3.500
FEB	.500 <T	BDL	1.000 <T	2.000 <T	1.500 <T	3.000	2.500
MAR	BDL	BDL	2.500	2.500	2.000 <T	3.500	2.000 <T
APR	.500 <T	BDL	1.500 <T	2.000 <T	2.000 <T	4.000	3.000
MAY	.500 <T	.500 <T	3.500	3.000	3.000	4.500	3.500
JUN	.500 <T	.500 <T	4.500	2.500	3.000	5.500	5.500
JUL	TUR	BDL	1.000 <T	.500 <T	2.500	6.500	5.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
AUG	.500 <T	.500 <T	2.000 <T	1.000 <T	2.500	6.500	6.000
SEP	BDL	BDL	4.500	4.000	3.000	5.500	4.500
OCT	1.000 <T	1.000 <T	4.500	3.000	3.500	5.500	4.500
NOV	BDL	BDL	4.500	1.000 <T	3.000	4.000	4.000
DEC	.500 <T	BDL	4.000	1.000 <T	1.500 <T	4.000	3.000
CONDUCTIVITY (UMHO/CM)		DET'N LIMIT = 1		GUIDELINE = 400 (F2)			
JAN	638	647	1099	669	1031	654	655
FEB	595	654	833	1C8	1020	629	638
MAR	623	637	1125	1094	994	613	619
APR	613	607	1053	1053	921	570	576
MAY	645	662	1115	1131	1059	607	608
JUN	618	638	1130	1109	1041	604	600
JUL	IUR	647	730	645	1052	584	586
AUG	641	651	650	652	1057	588	591
SEP	640	653	1151	1155	1053	596	599
OCT	633	648	1158	1105	1046	594	594
NOV	645	644	1182	816	1067	629	630
DEC	637	644	1159	818	1039	620	622
FLUORIDE (MG/L)		DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)			
JAN	.080	.040 <T	.060	.060	.060	.120	.120
FEB	.140	.120	.120	.120	.100	.120	.120
MAR	.100	.070	.100	.100	.070	.120	.120
APR	.110	.080	.100	.080	.080	.120	.120

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
MAY	.100	.080	.100	.090	.080	.120	.120
JUN	.110	.070	.100	.100	.080	.130	.130
JUL	.090	.090	.090	.080	.090	.140	.140
AUG	.100	.080	.060	.060	.080	.160	.160
SEP	.120	.080	.100	.100	.100	.160	.160
OCT	.120	.080	.100	.100	.100	.140	.160
NOV	.120	.080	.120	.100	.100	.140	.140
DEC	.080	.060	.080	.080	.060	.140	.160
HARDNESS (MG/L)		DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)			
JAN	329.000	333.000	501.000	342.000	474.000	309.000	305.000
FEB	335.000	341.000	402.000	408.000	466.000	292.000	289.000
MAR	339.000	346.000	527.000	525.000	483.000	295.000	295.000
APR	342.000	329.000	513.000	510.000	462.000	289.000	280.000
MAY	334.000	339.000	526.000	513.000	482.000	277.000	277.000
JUN	276.000	294.000	442.000	439.000	426.000	271.000	270.000
JUL	332.000	325.000	357.000	307.000	445.000	258.000	254.000
AUG	330.000	340.000	345.000	332.000	489.000	257.000	256.000
SEP	339.000	344.000	538.000	526.000	475.000	264.000	262.000
OCT	313.000	325.000	525.000	504.000	469.000	258.000	255.000
NOV	331.000	328.000	533.000	386.000	484.000	282.000	281.000
DEC	320.000	320.000	506.000	376.000	454.000	290.000	288.000
IONCAL (DIMENSLESS)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE							
TYPE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
			STANDING	FREE FLOW			
FEB	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF
MAR	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF
APR	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF
MAY	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF
JUN	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.000 NAF
JUL	.000 NAF	5.183	5.286	11.610	3.225	1.297	3.232
AUG	3.216	.632	.481	2.523	1.467	.582	.441
SEP	1.156	1.125	1.165	2.020	4.415	.801	.111
OCT	9.288	7.294	.445	.768	2.830	2.181	3.241
NOV	3.624	3.162	1.794	2.306	4.018	.871	.752
DEC	5.006	4.650	7.337	4.314	5.344	1.181	.438
LANGELIERS INDEX (DIMENSIONLESS)		DET'N LIMIT = N/A		GUIDELINE = N/A			
JAN	1.084 NAF	.907 NAF	1.167 NAF	1.014 NAF	1.088 NAF	.896 NAF	.879 NAF
FEB	.978 NAF	.965 NAF	1.100 NAF	-1.809 NAF	1.062 NAF	.960 NAF	.860 NAF
MAR	1.180 NAF	1.071 NAF	1.235 NAF	1.147 NAF	1.183 NAF	.964 NAF	.900 NAF
APR	1.299 NAF	1.164 NAF	1.039 NAF	1.079 NAF	1.127 NAF	1.191 NAF	1.185 NAF
MAY	1.091 NAF	1.111 NAF	1.249 NAF	1.218 NAF	1.212 NAF	.993 NAF	1.005 NAF
JUN	1.010 NAF	1.055 NAF	1.053 NAF	1.016 NAF	1.181 NAF	1.180 NAF	1.226 NAF
JUL	-2.555	1.106	1.163	1.124	1.237	.913	.925
AUG	1.212	1.223	1.243	1.194	1.322	.959	.938
SEP	1.080	1.121	1.263	1.266	1.173	.897	.905
OCT	1.241	1.260	1.278	1.289	1.220	1.038	1.049
NOV	.832	.894	1.065	.919	.977	.722	.677
DEC	1.076	1.067	1.279	1.096	1.119	.964	.953

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
MAGNESIUM (MG/L)		DET'N LIMIT = .050		GUIDELINE = 30 (F2)			
JAN	27.300	26.300	39.300	26.300	37.600	24.100	24.000
FEB	27.200	26.000	31.300	32.100	35.900	23.200	22.800
MAR	28.300	26.400	41.300	41.200	37.800	23.600	23.300
APR	27.500	25.200	40.800	41.200	36.700	22.500	21.800
MAY	27.900	26.200	41.500	41.600	37.800	22.600	22.400
JUN	27.200	25.300	40.600	40.700	37.800	20.600	20.900
JUL	27.700	26.200	28.000	25.600	38.100	19.900	19.800
AUG	27.500	25.100	26.100	25.500	37.400	19.800	19.700
SEP	27.600	26.000	41.800	41.200	36.900	20.200	20.100
OCT	28.600	25.700	42.500	41.300	36.900	20.000	20.000
NOV	27.700	25.700	41.300	29.700	36.300	22.600	22.800
DEC	27.500	26.200	42.300	31.000	37.400	23.500	23.200
SODIUM (MG/L)		DET'N LIMIT = .200		GUIDELINE = 200 (C3)			
JAN	8.400	8.400	45.800	9.800	37.200	20.000	20.200
FEB	8.600	8.600	23.400	25.000	38.200	20.000	20.400
MAR	9.000	8.800	50.400	49.000	36.400	21.200	21.800
APR	9.000	8.800	48.400	49.000	36.400	15.400	15.800
MAY	9.400	9.600	44.800	44.400	39.800	18.200	18.400
JUN	8.600	8.400	50.600	49.400	38.800	20.200	20.000
JUL	9.200	8.400	15.200	8.400	39.800	23.000	23.000
AUG	8.400	8.200	8.000	8.000	39.000	23.600	24.200
SEP	8.800	8.800	48.400	47.800	41.400	25.600	25.800
OCT	8.800	8.200	49.200	44.600	40.600	24.200	25.000
NOV	8.400	7.800	51.600	21.400	43.800	22.000	22.200

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
DEC	8.600	8.400	49.400	22.200	40.400	20.400	20.000
AMMONIUM TOTAL (MG/L)		DET'N LIMIT = 0.002		GUIDELINE = .05 (F2)			
JAN	.030	.008 <T	.008 <T	BDL	BDL	BDL	BDL
FEB	.002 <T	.004 <T	.004 <T	.012	.010	.004 <T	.006 <T
MAR	.008 <T	.010	.034	.080	.010	.002 <T	.010
APR	.010	.008 <T	.018	.072	.008 <T	.006 <T	.010
MAY	.006 <T	.008 <T	.006 <T	.062	.016	.016	.020
JUN	.008 <T	.010	.010	.022	.014	.014	.014
JUL	IUR	BDL	.002 <T	.002 <T	.002 <T	.032	.040
AUG	BDL	.004 <T	.002 <T	BDL	.004 <T	.066	.078
SEP	.010	.010	.008 <T	.	.010	.086	.080
OCT	.002	.004	.002	.004	.006	.054	.064
NOV	.002 <T	.004 <T	.002 <T	.004 <T	.004 <T	.012	.014
DEC	.010	.012	.010	.012	.012	.010	.012
NITRITE (MG/L)		DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)			
JAN	.008	BDL	BDL	.001 <T	.001 <T	.001 <T	BDL
FEB	.010	BDL	.001 <T	.007	.002 <T	.001 <T	.001 <T
MAR	.011	.004 <T	.015	.013	.005	.003 <T	.004 <T
APR	.010	.001 <T	.002 <T	.003 <T	.001 <T	.001 <T	.001 <T
MAY	.011	.002 <T	.003 <T	.013	.001 <T	.003 <T	.001 <T
JUN	.010	.001 <T	.002 <T	.005	.002 <T	.002 <T	.002 <T
JUL	IUR	.002 <T	.002 <T	.002 <T	.001 <T	.003 <T	.002 <T
AUG	.006	.002 <T	.002 <T	.002 <T	.002 <T	.007	.003 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
SEP	.010	.003 <T	.005	.004 <T	.002 <T	.003 <T	.004 <T
OCT	.010	.002 <T	.004 <T	.003 <T	.005	.005	.009
NOV	.013	.005	.005	.005	.004 <T	.007	.006
DEC	.010	.004 <T	.005	.004 <T	.004 <T	.005	.004 <T
TOTAL NITRATES (MG/L)		DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)			
JAN	.605	3.400	.670	3.260	.380	3.390	3.440
FEB	.610	3.390	2.270	ICE	.370	2.910	2.920
MAR	.610	3.470	.375	.325	.335	2.810	2.830
APR	.630	3.370	.310	.195	.340	2.580	2.460
MAY	.630	3.820	.180	.125	.385	2.040	2.020
JUN	.580	3.340	.240	.260	.395	.830	.825
JUL	IUR	3.530	3.000	3.520	.435	.455	.460
AUG	.570	3.360	3.370	3.390	.420	.290	.295
SEP	.595	3.240	.245	.	.415	.270	.290
OCT	.555	2.820	.230	.445	.375	.275	.270
NOV	.665	3.430	.245	2.420	.495	2.420	2.480
DEC	.690	3.320	.220	2.290	.440	2.740	2.740
NITROGEN TOT KJELD (MG/L)		DET'N LIMIT = .020		GUIDELINE = N/A			
JAN	.020 <T	.060 <T	.170	.060 <T	.080 <T	.270	.270
FEB	.040 <T	.050 <T	.160	.130	.090 <T	.220	.190
MAR	.050 <T	.070 <T	.160	.150	.080 <T	.220	.220
APR	.030 <T	.080 <T	.200	.190	.090 <T	.250	.220
MAY	.050 <T	.070 <T	.120	.150	.100	.210	.210

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	RAINNEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
JAN	.040 <T	.080 <T	.160	.140	.100	.230	.250
FEB	BDL	.130	.160	.100	.120	.280	.270
MAR	.040 <T	.070 <T	.120	.080 <T	.120	.370	.370
APR	.090 <T	.110	.140	.	.130	.340	.330
MAY	.030 <T	.060 <T	.190	.070 <T	.070 <T	.220	.230
JUN	.060 <T	.060 <T	.100	.060 <T	.090 <T	.290	.290
JUL	BDL	.070 <T	.110	.060 <T	.070 <T	.290	.280
PH (DIMENSELESS)		DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)			
JAN	8.240	8.010	8.040	8.110	7.980	8.090	8.080
FEB	8.060	8.040	8.090	ICE	7.940	8.180	8.080
MAR	8.260	8.140	8.060	7.990	8.040	8.180	8.110
APR	8.360	8.270	7.930	7.970	8.040	8.400	8.400
MAY	8.170	8.180	8.100	8.070	8.060	8.230	8.240
JUN	8.240	8.230	8.040	8.020	8.130	8.420	8.470
JUL	1UR	8.210	8.210	8.260	8.140	8.200	8.220
AUG	8.300	8.290	8.310	8.280	8.170	8.250	8.230
SEP	8.160	8.190	8.090	8.100	8.030	8.180	8.190
OCT	8.370	8.350	8.130	8.160	8.080	8.330	8.350
NOV	7.920	7.990	7.890	7.920	7.820	7.970	7.930
DEC	8.180	8.180	8.140	8.120	8.010	8.190	8.180
PHOSPHORUS FIL REACT (MG/L)		DET'N LIMIT = .0005		GUIDELINE = N/A			
JAN	.002	.001 <T	.	.	.002 <T	.002 <T	.002
FEB	.000 <T	BDL	.	.	.001 <T	.001 <T	.001 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	RAMMHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
MAR	.001 <T	.001 <T	.	.	.001 <T	.001 <T	.003
APR	.002	.001 <T	.	.	.001 <T	.002 <T	.002
MAY	.001 <T	.001 <T	.	.	.002	.002 <T	.003
JUN	.001 <T	.001 <T	.	.	.002	.002	.003
JUL	IUR	.000 <T	.	.	.001 <T	.001 <T	ICR
AUG	.001 <T	.001 <T	.	.	.001 <T	.001 <T	.003
SEP	.002 <T	.002 <T	.	.	.003	.003	.004
OCT	.001 <T	.001 <T	.	.	.001	.002	.003
NOV	.001 <T	.001 <T	.	.	.002	.001 <T	.003
DEC	BDL	BDL	.	.	.000 <T	.000 <T	.002
PHOSPHORUS TOTAL (MG/L)		DET'N LIMIT = .002		GUIDELINE = .40 (F2)			
JAN	BDL	BDL	.	.	.002 <T	.002 <T	BDL
FEB	.004 <T	.002 <T	.	.	.003 <T	.003 <T	.003 <T
MAR	BDL	BDL	.	.	BDL	BDL	BDL
APR	BDL	BDL	.	.	.002 <T	.002 <T	.003 <T
MAY	BDL	BDL	.	.	.002 <T	.002 <T	.002 <T
JUN	.005 <T	.003 <T	.	.	.002 <T	.002 <T	.003 <T
JUL	.003 <T	.002 <T	.	.	BDL	.004 <T	BDL
AUG	BDL	BDL	.	.	.004 <T	.006 <T	.009 <T
SEP	BDL	BDL	.	.	.004 <T	.003 <T	.003 <T
OCT	BDL	.003 <T	.	.	.005 <T	.004 <T	.005 <T
NOV	BDL	BDL	.	.	.002 <T	BDL	.002 <T
DEC	BDL	BDL	.	.	BDL	.002 <T	.003 <T
SULPHATE ( )		DET'N LIMIT = .200		GUIDELINE = 500. (A3)			

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRAIGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
JAN	58.220	51.180	78.260	51.740	83.940	45.390	45.730
AUG	53.450	50.970	51.430	51.080	119.100	43.160	42.840
SEP	53.000	50.800	186.000	175.000	120.300	47.900	48.000
OCT	55.300	52.000	178.200	161.700	106.700	51.140	51.760
NOV	54.580	49.340	163.300	85.300	90.000	53.700	51.560
DEC	46.920	42.670	172.200	79.350	106.200	50.350	49.260
TURBIDITY (FTU)		DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)			
JAN	.080 <T	.080 <T	.270	.110	.140	.050 <T	.050 <T
FEB	.210	.210	.480	.240	.810	.210	.200
MAR	.100 <T	.070 <T	1.220	.270	.260	.050 <T	.100 <T
APR	.090 <T	.200	.310	.230	.260	.060 <T	.050 <T
MAY	.080 <T	.060 <T	.370	.270	.150	.060 <T	.050 <T
JUN	.090 <T	.110	.610	.190	.540	.040 <T	.030 <T
JUL	IUB	.870	.490	.380	.520	.370	.250
AUG	.500	.320	.700	.240	.350	.430	.410
SEP	IBD	IBD	IBD	IBD	.670	.980	.950
OCT	.460	.080 <T	2.600	.590	.430	.110 <T	.060 <T
NOV	.330	.110 <T	.470	.500	.460	.120 <T	.110 <T
DEC	.210 <T	.170 <T	.470	.360	.790	.270	.200 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	RAMMHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
METALS						
SILVER (UG/L)	DET'N LIMIT = .020		GUIDELINE = 50. (A1)			
JAN	BDL	BDL	.020 <T	BDL	BDL	BDL
FEB	.030 <T	.040 <T	.030 <T	.030 <T	BDL	.020 <T	.040 <T
MAR	.030 <T	.020 <T	.040 <T	.030 <T	.020 <T	.020 <T	.020 <T
APR	BDL	BDL	.040 <T	BDL	.030 <T	.040 <T	BDL
MAY	.030 <T	.030 <T	BDL	BDL	BDL	BDL	.080 <T
JUN	BDL	.050 <T	BDL	BDL	.090 <T	.070 <T	.060 <T
JUL	BDL	BDL	BDL	BDL	.100 <T	.080 <T	.060 <T
AUG	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEP	.070 <T	.060 <T	.040 <T	.030 <T	BDL	.030 <T	.110 <T
OCT	.030 <T	BDL	BDL	BDL	.040 <T	BDL	BDL
NOV	.040 <T	BDL	BDL	BDL	BDL	BDL	BDL
DEC	.030 <T	BDL	.030 <T	BDL	.040 <T	BDL	.030 <T
ALUMINUM (UG/L)	DET'N LIMIT = .050		GUIDELINE = 100.(A4)			
JAN	5.600	4.700	8.000	4.600	5.600	3.000	3.100
FEB	10.000	6.100	7.000	6.600	7.700	4.200	4.100
MAR	1.300	1.200	2.300	1.200	1.300	1.100	1.100
APR	3.100	2.900	3.900	3.500	3.200	2.000	1.900
MAY	2.800	2.600	3.200	3.100	3.000	2.100	1.800
JUN	11.000	8.600	13.000	10.000	9.100	5.600	5.200
JUL	1.100	.800	1.300	.680	.980	.960	.980
AUG	4.700	15.000	6.000	4.400	4.200	3.300	3.400
SEP	6.600	6.100	8.700	6.900	6.200	4.700	4.200
OCT	1.700	1.600	4.900	1.600	1.900	1.800	1.800

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE							
TYPE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
			STANDING	FREE FLOW			
NOV	4.200	4.300	5.700	4.100	4.200	2.700	3.100
DEC	5.400	4.300	5.400	4.500	6.300	3.100	8.000
ARSENIC (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 50.0 (A1)			
JAN	.200 <T	.300 <T	1.400	.600 <T	1.400	.400 <T	.330 <T
FEB	.180 <T	.210 <T	.660 <T	.590 <T	1.400	.310 <T	.370 <T
MAR	.140 <T	.470 <T	1.800	1.500	1.300	.060 <T	BDL
APR	BDL	BDL	.330 <T	.140 <T	.220 <T	.130 <T	BDL
MAY	BDL	.130 <T	.920 <T	.710 <T	.690 <T	.090 <T	.220 <T
JUN	.130 <T	.180 <T	.470 <T	.210 <T	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	.770 <T	.060 <T	BDL
AUG	.200 <T	.470 <T	.430 <T	.520 <T	1.300	.480 <T	.560 <T
SEP	.410 <T	.770 <T	3.300	2.500	2.900	1.000 <T	.730 <T
OCT	.290 <T	.410 <T	1.800	1.400	1.200	.430 <T	.440 <T
NOV	.250 <T	.290 <T	1.400	.690 <T	1.000 <T	.300 <T	.450 <T
DEC	.340 <T	.290 <T	1.000 <T	.390 <T	.990 <T	.110 <T	.270 <T
BARIUM (UG/L)		DET'N LIMIT = 0.020		GUIDELINE = 1000. (A1)			
JAN	90.360	95.000	89.000	82.000	100.000	22.000	23.000
FEB	93.000	94.000	80.000	84.000	110.000	23.000	22.000
MAR	94.000	98.000	92.000	94.000	110.000	22.000	23.000
APR	100.000	100.000	110.000	100.000	140.000	25.000	25.000
MAY	110.000	110.000	110.000	94.000	120.000	24.000	26.000
JUN	120.000	120.000	130.000	120.000	150.000	31.000	31.000
JUL	98.000	99.000	72.000	84.000	130.000	26.000	27.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HAMMHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
AUG	110.000	110.000	84.000	99.000	120.000	27.000	26.000
SEP	100.000	100.000	120.000	100.000	120.000	26.000	29.000
OCT	110.000	110.000	110.000	100.000	130.000	28.000	27.000
NOV	110.000	110.000	110.000	88.000	130.000	28.000	28.000
DEC	110.000	110.000	120.000	93.000	140.000	27.000	28.000
BORON (UG/L)		DET'N LIMIT = 0.200		GUIDELINE = 5000. (A1)			
JAN	14.000 <T	11.000 <T	23.000	11.000 <T	23.000	16.000 <T	16.000 <T
FEB	13.000 <T	10.000 <T	17.000 <T	16.000 <T	23.000	17.000 <T	16.000 <T
MAR	13.000 <T	11.000 <T	27.000	25.000	24.000	18.000 <T	17.000 <T
APR	13.000 <T	11.000 <T	28.000	29.000	23.000	19.000 <T	16.000 <T
MAY	18.000 <T	20.000 <T	22.000	32.000	23.000	22.000	27.000
JUN	43.000	15.000 <T	90.000	79.000	36.000	81.000	27.000
JUL	13.000 <T	9.800 <T	17.000 <T	10.000 <T	24.000	25.000	25.000
AUG	15.000 <T	91.000	98.000	96.000	44.000	50.000	93.000
SEP	110.000	70.000	160.000	76.000	60.000	110.000	92.000
OCT	39.000	33.000	57.000	55.000	62.000	50.000	44.000
NOV	100.000	160.000	180.000	97.000	160.000	130.000	140.000
DEC	120.000	51.000	100.000	130.000	160.000	52.000	100.000
BERYLLIUM (UG/L)		DET'N LIMIT = 0.010		GUIDELINE = .20 (N)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL	BDL
FEB	.010 <T	.010 <T	.020 <T	.010 <T	.010 <T	BDL	.010 <T
MAR	.010 <T	BDL	.010 <T	BDL	.010 <T	.010 <T	BDL
APR	BDL	BDL	BDL	BDL	BDL	BDL	.030 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HAMMHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
MAY	.020 <T	.030 <T	BDL	BDL	BDL	BDL	.040 <T
JUN	BDL	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	.040 <T	.050 <T	.110 <T	BDL	.020 <T	.060 <T
SEP	.090 <T	.110 <T	.160 <T	.060 <T	BDL	.100 <T	.040 <T
OCT	.090 <T	.130 <T	.090 <T	.130 <T	.080 <T	.050 <T	.080 <T
NOV	.320 <T	.450 <T	.420 <T	.260 <T	.400 <T	.260 <T	.340 <T
DEC	.240 <T	.100 <T	.150 <T	.150 <T	.170 <T	.150 <T	.060 <T
CADMIUM (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 5.000 (A1)			
JAN	BDL	BDL	.160 <T	BDL	BDL	BDL	BDL
FEB	BDL	.050 <T	.150 <T	BDL	.060 <T	BDL	BDL
MAR	.060 <T	.050 <T	.200 <T	BDL	.100 <T	.050 <T	.050 <T
APR	BDL	BDL	.120 <T	BDL	.080 <T	BDL	BDL
MAY	BDL	BDL	.100 <T	BDL	.060 <T	BDL	BDL
JUN	BDL	.060 <T	BDL	BDL	.100 <T	.100 <T	.080 <T
JUL	BDL	BDL	BDL	BDL	.060 <T	.070 <T	.080 <T
AUG	BDL	BDL	.110 <T	BDL	BDL	.060 <T	BDL
SEP	BDL	BDL	.120 <T	BDL	BDL	.070 <T	.090 <T
OCT	BDL	BDL	.060 <T	BDL	.070 <T	.100 <T	.080 <T
NOV	.090 <T	.080 <T	.080 <T	BDL	.060 <T	.070 <T	.110 <T
DEC	BDL	BDL	BDL	BDL	.100 <T	.080 <T	.060 <T
COBALT (UG/L)		DET'N LIMIT = 0.020		GUIDELINE = 1000 (H)			
JAN	.250 <T	.310 <T	.440 <T	.240 <T	.690 <T	.300 <T	.290 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
FEB	BDL	BDL	BDL	BDL	.270 <T	.070 <T	.030 <T
MAR	.210 <T	.240 <T	.590 <T	.480 <T	.690 <T	.470 <T	.380 <T
APR	.130 <T	.160 <T	.170 <T	.310 <T	.560 <T	.140 <T	.190 <T
MAY	.030 <T	BDL	BDL	.090 <T	.360 <T	.040 <T	.110 <T
JUN	.140 <T	.080 <T	.140 <T	.170 <T	.360 <T	.170 <T	.110 <T
JUL	.120 <T	.100 <T	BDL	.120 <T	.300 <T	.090 <T	.130 <T
AUG	.190 <T	.240 <T	.180 <T	.200 <T	.620 <T	.240 <T	.270 <T
SEP	.360 <T	.270 <T	.430 <T	.540 <T	.790 <T	.420 <T	.380 <T
OCT	.120 <T	.170 <T	.340 <T	.270 <T	.670 <T	.210 <T	.280 <T
NOV	.190 <T	.180 <T	.240 <T	.260 <T	.700 <T	.250 <T	.340 <T
DEC	.210 <T	.160 <T	.240 <T	.180 <T	.660 <T	.300 <T	.270 <T
CHROMIUM (UG/L)		DET'N LIMIT = 0.100		GUIDELINE = 50. (A1)			
JAN	.150 <T	.100 <T	.100 <T	.140 <T	BDL	.130 <T	.160 <T
FEB	.200 <T	.150 <T	.160 <T	BDL	BDL	.210 <T	.190 <T
MAR	.130 <T	.190 <T	.220 <T	.200 <T	.160 <T	.300 <T	.310 <T
APR	BDL	.320 <T	.140 <T	.860 <T	BDL	.560 <T	.140 <T
MAY	1.800	3.000	.360 <T	2.200	.900 <T	1.900	2.500
JUN	3.300	.420 <T	6.600	5.600	1.000 <T	6.200	.610 <T
JUL	BDL	BDL	1.300	.330 <T	BDL	.120 <T	BDL
AUG	BDL	19.000	8.600	8.600	2.200	2.400	6.600
SEP	11.000	6.800	13.000	5.500	3.900	9.200	1.800
OCT	14.000	12.000	14.000	15.000	16.000	10.000	9.700
NOV	9.600	16.000	17.000	9.100	14.000	11.000	12.000
DEC	11.000	3.900	6.400	11.000	13.000	3.000	7.900

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
COPPER (UG/L)		DET'N LIMIT = .100		QUIDELINE = 1000 (A3)			
JAN	1.050	2.700	67.000	3.100	1.900	2.800	57.000
FEB	1.100	3.000	68.000	7.200	2.100	2.500	63.000
MAR	1.100	2.100	52.000	6.600	2.700	2.400	120.000
APR	1.300	2.500	76.000	11.000	3.700	2.900	110.000
MAY	1.700	3.500	62.000	7.800	3.700	2.900	85.000
JUN	1.300	2.400	81.000	10.000	4.000	5.200	12.000
JUL	1.000 <T	2.900	.630 <T	5.900	3.000	4.600	91.000
AUG	1.100	3.800	50.000	9.000	3.700	4.800	98.000
SEP	1.300	2.400	100.000	16.000	4.000	5.200	120.000
OCT	2.400	3.100	87.000	8.700	2.800	4.400	130.000
NOV	1.000 <T	2.400	220.000	7.000	3.500	3.700	120.000
DEC	2.200	2.500	170.000	12.000	2.800	3.800	140.000
IRON (UG/L)		DET'N LIMIT = 4.000		QUIDELINE = 300. (A3)			
JAN	8.490 <T	BDL	120.000	4.000 <T	110.000	BDL	BDL
FEB	12.000 <T	7.600 <T	61.000	73.000	130.000	BDL	BDL
MAR	10.000 <T	7.400 <T	590.000	110.000	110.000	4.100 <T	4.400 <T
APR	8.800 <T	7.500 <T	190.000	110.000	110.000	4.600 <T	8.200 <T
MAY	8.200 <T	8.200 <T	220.000	180.000	130.000	6.500 <T	BDL
JUN	7.200 <T	BDL	280.000	83.000	130.000	6.400 <T	8.600 <T
JUL	BDL	BDL	BDL	8.100 <T	110.000	BDL	BDL
AUG	8.200 <T	BDL	12.000 <T	6.400 <T	110.000	BDL	BDL
SEP	BDL	BDL	270.000	110.000	120.000	BDL	5.100 <T
OCT	BDL	BDL	210.000	81.000	100.000	BDL	BDL
NOV	BDL	BDL	270.000	50.000 <T	100.000	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
DEC	5.800 <T	8.500 <T	270.000	34.000 <T	120.000	7.800 <T	20.000 <T
MERCURY (UG/L)		DET'N LIMIT = 0.010		GUIDELINE = 1.000 (A1)			
JAN	.060	.050	.	.050	.060	.160	.060
FEB	.080	.080	.	.070	.080	.080	.110
MAR	.020	.020	.	.020	.020	.020	.020
APR	.050	.040	.	.020	.020	.020	.040
MAY	BDL	BDL	.	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.	BDL	BDL	BDL	BDL
JUL	.020 <T	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	.030 <T	.020 <T	.020 <T
SEP	BDL	.020 <T	.	.020 <T	BDL	.020 <T	.020 <T
OCT	.030 <T	.030 <T	.	.030 <T	.030 <T	.030 <T	.030 <T
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	BDL	BDL	BDL
MANGANESE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 50.0 (A3)			
JAN	10.430	4.900	19.000	3.800	84.000	.570	.550
FEB	10.000	5.700	14.000	42.000	91.000	.590	.530
MAR	10.000	5.400	180.000	86.000	90.000	.640	.560
APR	11.000	5.700	50.000	240.000	110.000	.560	.480 <T
MAY	11.000	5.300	85.000	260.000	100.000	.540	.520
JUN	11.000	6.000	39.000	85.000	100.000	.590	.540
JUL	10.000	4.400	BDL	2.400	95.000	2.500	2.400
AUG	10.000	7.500	26.000	2.100	99.000	26.000	26.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
SEP	11.000	5.000	28.000	60.000	100.000	58.000	57.000
OCT	11.000	7.200	30.000	35.000	100.000	76.000	75.000
NOV	11.000	4.200	56.000	19.000	97.000	56.000	56.000
DEC	11.000	5.500	56.000	32.000	100.000	34.000	34.000
MOLYBDENUM (UG/L)		DET'N LIMIT = 0.020		GUIDELINE = 500 (H)			
JAN	.590	.470 <T	.460 <T	.460 <T	.480 <T	.620	.540
FEB	.670	.510	.560	.590	.570	.610	.630
MAR	.650	.550	.520	.530	.540	.640	.620
APR	.700	.540	.490 <T	.570	.600	.580	.580
MAY	.760	.600	.630	.640	.540	.550	.590
JUN	.750	.640	.560	.700	.630	.640	.660
JUL	.620	.510	.630	.580	.510	.840	.930
AUG	.760	.800	.940	.700	.570	1.300	1.400
SEP	.720	.510	.580	.500 <T	.530	1.500	1.500
OCT	.720	.550	.500 <T	.500 <T	.620	1.500	1.600
NOV	.670	.660	.550	.570	.530	1.100	1.100
DEC	.780	.570	.590	.610	.560	.970	1.100
NICKEL (UG/L)		DET'N LIMIT = 0.100		GUIDELINE = 50. (F3)			
JAN	2.160	2.000	6.700	2.300	3.700	2.400	2.400
FEB	BDL	BDL	1.200 <T	BDL	BDL	BDL	BDL
MAR	1.700	1.300 <T	3.200	1.600	1.500	2.400	2.200
APR	1.400 <T	1.400 <T	4.400	1.300 <T	2.200	2.100	1.500
MAY	BDL	BDL	1.200 <T	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW		
JUN	BDL	BDL	1.100 <T	BDL	BDL	BDL
JUL	BDL	BDL	.360 <T	BDL	BDL	.310 <T	.300 <T
AUG	BDL	1.100 <T	3.000	.110 <T	1.400 <T	1.300 <T	1.200 <T
SEP	.510 <T	.380 <T	4.600	1.900 <T	1.500 <T	1.100 <T	.690 <T
OCT	1.100 <T	.970 <T	5.200	2.700	6.100	1.600 <T	3.000
NOV	BDL	BDL	8.900	BDL	1.000 <T	.480 <T	.240 <T
DEC	BDL	BDL	7.200	.410 <T	BDL	.530 <T	.920 <T
LEAD (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 50. (A1)			
JAN	.230	.420	.980	.040 <T	.110 <T	.120 <T	.490
FEB	.190 <T	.330	.530	.050 <T	.150 <T	.100 <T	.460
MAR	.100 <T	.250	.870	.110 <T	.140 <T	.100 <T	.530
APR	.090 <T	.230	.920	.100 <T	.270	.080 <T	.560
MAY	.240	.290	.620	.070 <T	.250	.110 <T	1.000
JUN	.270	.300	1.500	.140 <T	.190 <T	.250	1.000
JUL	.080 <T	.290	BDL	.030 <T	.220	.230	.790
AUG	.080 <T	68.000	.710	.100 <T	.180 <T	.190 <T	1.100
SEP	.150 <T	.240	.750	.130 <T	.160 <T	.200 <T	1.200
OCT	.060 <T	.230	.770	.070 <T	.190 <T	.250	.620
NOV	.100 <T	.320	38.000	.910	.270	.160 <T	1.000
DEC	.270	.240	24.000	1.200	.480	.230	1.300
ANTIMONY (UG/L)		DET'N LIMIT = .050		GUIDELINE = 146. (D4)			
JAN	.020 <T	.040 <T	.040 <T	.030 <T	.040 <T	.070 <T	.020 <T
FEB	.050 <T	.040 <T	.060 <T	.040 <T	.050 <T	.050 <T	.070 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
MAR	.040 <T	.020 <T	.090 <T	.040 <T	.060 <T	.060 <T	.070 <T
APR	.040 <T	BDL	.050 <T	BDL	.050 <T	.040 <T	.040 <T
MAY	.060 <T	.050 <T	.050 <T	.040 <T	.030 <T	.040 <T	.070 <T
JUN	BDL	.030 <T	.050 <T	BDL	.030 <T	.100 <T	.030 <T
JUL	BDL	BDL	.070 <T	.060 <T	.080 <T	.100 <T	.120 <T
AUG	.320	4.300	.390	.350	.340	.330	.340
SEP	.370	.300	.440	.380	.340	.360	.500
OCT	.060 <T	.060 <T	.030 <T	BDL	.060 <T	.090 <T	.070 <T
NOV	.340	.440	.540	.380	.380	.380	.390
DEC	.370	.270	.590	.310	.270	.310	.270
SELENIUM (UG/L)		DET'N LIMIT = 0.200		GUIDELINE = 10. (A1)			
JAN	.460 <T	.680 <T	.780 <T	.420 <T	.340 <T	.510 <T	BDL
FEB	.900 <T	.860 <T	.750 <T	1.100 <T	.920 <T	.390 <T	.670 <T
MAR	1.200 <T	.920 <T	1.800 <T	1.800 <T	2.200 <T	1.100 <T	1.600 <T
APR	.610 <T	BDL	.950 <T	.720 <T	2.700 <T	.830 <T	1.300 <T
MAY	BDL	BDL	.290 <T	1.100 <T	.810 <T	BDL	1.500 <T
JUN	.540 <T	BDL	.650 <T	1.100 <T	2.300 <T	1.600 <T	1.100 <T
JUL	.650 <T	BDL	BDL	BDL	BDL	.330 <T	BDL
AUG	1.200 <T	.700 <T	BDL	.330 <T	.450 <T	.250 <T	BDL
SEP	BDL	.500 <T	.600 <T	1.000 <T	1.000 <T	.450 <T	.910 <T
OCT	BDL	BDL	BDL	BDL	1.100 <T	BDL	BDL
NOV	.420 <T	1.900 <T	1.300 <T	1.900 <T	2.900 <T	1.400 <T	1.500 <T
DEC	BDL	.550 <T	.500 <T	.210 <T	2.200 <T	1.500 <T	.910 <T
STRONTIUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = 2000.(H)			

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
JAN	234.000	190.000	940.000	290.000	560.000	500.000	510.000
FEB	240.000	190.000	690.000	620.000	590.000	540.000	560.000
MAR	240.000	190.000	1000.000	1000.000	550.000	560.000	560.000
APR	260.000	200.000	1200.000	1200.000	670.000	580.000	560.000
MAY	280.000	220.000	1400.000	1400.000	690.000	560.000	580.000
JUN	270.000	200.000	1300.000	1300.000	700.000	580.000	590.000
JUL	220.000	170.000	570.000	210.000	580.000	450.000	450.000
AUG	230.000	190.000	290.000	190.000	550.000	410.000	430.000
SEP	260.000	200.000	1300.000	1400.000	650.000	500.000	500.000
OCT	250.000	190.000	1400.000	1200.000	620.000	480.000	490.000
NOV	250.000	200.000	1400.000	650.000	630.000	520.000	520.000
DEC	260.000	200.000	1400.000	710.000	660.000	570.000	570.000
TITANIUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = N/A			
JAN	19.000	17.000	23.000	18.000	22.000	13.000	14.000
FEB	17.000	16.000	19.000	19.000	22.000	13.000	13.000
MAR	29.000	27.000	37.000	35.000	34.000	17.000	17.000
APR	18.000	17.000	23.000	22.000	19.000	10.000	11.000
MAY	13.000	13.000	17.000	18.000	16.000	9.100	9.500
JUN	20.000	20.000	27.000	25.000	24.000	13.000	13.000
JUL	22.000	17.000	20.000	17.000	22.000	12.000	11.000
AUG	18.000	19.000	19.000	18.000	21.000	11.000	12.000
SEP	21.000	21.000	30.000	28.000	24.000	14.000	13.000
OCT	10.000	9.000	12.000	12.000	13.000	6.400	6.200
NOV	24.000	23.000	33.000	24.000	27.000	16.000	14.000
DEC	16.000	15.000	21.000	17.000	20.000	11.000	12.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HAMMHEIM RESERVOIR	SITE 1	STRASSE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
THALLIUM (UG/L)		**DET'N LIMIT = .010**	**GUIDELINE = 13. (D4)**			
JAN	.020 <T	.020 <T	.040 <T	.010 <T	.030 <T	.020 <T	.010 <T
FEB	.020 <T	.010 <T	BDL	BDL	.020 <T	.010 <T	.010 <T
MAR	.010 <T	.010 <T	.010 <T	.010 <T	.020 <T	.010 <T	.010 <T
APR	.020 <T	BDL	BDL	BDL	.040 <T	.030 <T	.020 <T
MAY	.030 <T	BDL	BDL	BDL	.020 <T	BDL	BDL
JUN	BDL	.030 <T	BDL	BDL	.040 <T	BDL	.050 <T
JUL	.020 <T	BDL	BDL	BDL	.030 <T	.020 <T	.020 <T
AUG	.030 <T	.050 <T	.030 <T	BDL	.030 <T	.050 <T	.030 <T
SEP	.030 <T	.030 <T	BDL	.030 <T	.040 <T	.040 <T	.040 <T
OCT	.020 <T	BDL	BDL	.020 <T	.030 <T	.030 <T	.020 <T
NOV	BDL	BDL	BDL	BDL	BDL	BDL	BDL
DEC	.020 <T	.030 <T	.040 <T	BDL	.030 <T	.040 <T	.040 <T
URANIUM (UG/L)		**DET'N LIMIT = .020**	**GUIDELINE = 20. (A2)**			
JAN	.810	.940	1.100	.370	1.400	.740	.740
FEB	.920	.990	1.200	1.100	1.600	.750	.710
MAR	.790	.940	1.200	1.200	1.300	.540	.600
APR	.860	.930	1.400	1.400	1.400	.710	.650
MAY	.950	.940	1.400	1.300	1.300	.610	.710
JUN	1.200	1.200	1.900	1.900	2.000	.810	.820
JUL	.950	1.000	1.100	.990	1.700	.640	.610
AUG	.990	1.000	1.000	1.100	1.400	.530	.690
SEP	.930	.940	1.300	1.300	1.400	.460	.660
OCT	.960	.970	1.400	1.300	1.600	.550	.500
NOV	.970	.940	1.500	1.100	1.500	.430	.650

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
DEC	.870	.940	1.400	1.100	1.600	.630	.710
VANADIUM (UG/L)		DET'N LIMIT = .050		GUIDELINE = 100 (R)			
JAN	.240 <T	.150 <T	.230 <T	.080 <T	.300 <T	.160 <T	.210 <T
FEB	.170 <T	.080 <T	BDL	BDL	.040 <T	.080 <T	.100 <T
MAR	.230 <T	.110 <T	.170 <T	.060 <T	.110 <T	.110 <T	.080 <T
APR	.200 <T	.160 <T	.020 <T	.030 <T	.080 <T	.130 <T	.160 <T
MAY	.190 <T	.130 <T	BDL	.010 <T	.040 <T	.120 <T	.100 <T
JUN	.220 <T	.130 <T	BDL	BDL	BDL	.140 <T	.070 <T
JUL	.280 <T	.180 <T	.130 <T	.150 <T	.410 <T	.290 <T	.290 <T
AUG	.270 <T	.220 <T	.120 <T	.150 <T	.260 <T	.270 <T	.290 <T
SEP	.310 <T	.220 <T	.290 <T	.210 <T	.320 <T	.290 <T	.340 <T
OCT	.360 <T	.290 <T	.590	.650	.730	.420 <T	.420 <T
NOV	.290 <T	.240 <T	.220 <T	.140 <T	.220 <T	.230 <T	.210 <T
DEC	.280 <T	.200 <T	.330 <T	.220 <T	.330 <T	.230 <T	.270 <T
ZINC (UG/L)		DET'N LIMIT = .001		GUIDELINE = 5000. (A3)			
JAN	5.670	4.800	23.000	3.100	14.000	4.200	3.800
FEB	4.900	4.600	18.000	3.200	12.000	3.200	2.800
MAR	5.900	5.200	21.000	6.700	21.000	3.900	4.100
APR	6.800	6.100	24.000	8.300	24.000	3.900	3.500
MAY	6.900	5.900	22.000	7.100	23.000	4.000	3.200
JUN	6.900	5.400	24.000	7.400	21.000	6.500	4.800
JUL	6.500	6.200	2.100	3.300	18.000	5.800	5.000
AUG	6.100	7.800	15.000	4.200	24.000	6.000	4.800

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE TYPE	K21 RAW	HAMMHEIN RESERVOIR	SITE 1 STANDING	SITE 1 FREE FLOW	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
SEP	8.000	7.100	34.000	8.700	24.000	7.500	6.100
OCT	6.300	5.800	25.000	4.700	20.000	5.500	4.500
NOV	6.300	6.500	60.000	4.700	23.000	5.600	4.700
DEC	9.300	6.900	46.000	4.900	20.000	4.400	5.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	RAMMHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
PAH							
ANTHRACENE (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 2.8 (D4T)			
JAN	BDL	BDL	.	.	BDL	BDL	BDL
FEB	BDL	BDL	.	.	1.000	ILA	BDL
MAR	BDL	BDL	.	.	BDL	BDL	BDL
APR	BDL	BDL	.	.	BDL	BDL	BDL
MAY	BDL	BDL	.	.	BDL	BDL	BDL
JUN	BDL	BDL	.	.	BDL	BDL	BDL
JUL	BDL	BDL	.	.	BDL	BDL	BDL
AUG	BDL	BDL	.	.	BDL	BDL	BDL
SEP	BDL	BDL	.	.	BDL	BDL	BDL
OCT	BDL	BDL	.	.	BDL	BDL	BDL
NOV	BDL	BDL	.	.	BDL	BDL	ILA
DEC	BDL	BDL	.	.	BDL	BDL	BDL
FLUORANTHENE (NG/L)		DET'N LIMIT = 20.000		GUIDELINE = 42000 (D4)			
JAN	BDL	BDL	.	.	BDL	BDL	BDL
FEB	BDL	BDL	.	.	20.000	ILA	BDL
MAR	BDL	BDL	.	.	BDL	BDL	BDL
APR	BDL	BDL	.	.	BDL	BDL	BDL
MAY	BDL	BDL	.	.	BDL	BDL	BDL
JUN	BDL	BDL	.	.	BDL	BDL	BDL
JUL	BDL	BDL	.	.	BDL	BDL	BDL
AUG	BDL	BDL	.	.	BDL	BDL	BDL
SEP	BDL	BDL	.	.	BDL	BDL	BDL
OCT	BDL	BDL	.	.	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	RAMMHEIN RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
NOV	BDL	BDL	.	.	BDL	BDL	ILA
DEC	BDL	BDL	.	.	BDL	BDL	BDL
PYRENE (NG/L)		DET'N LIMIT = 20.000	GUIDELINE = 2.8 (D&T)				
JAN	BDL	BDL	.	.	BDL	BDL	BDL
FEB	BDL	BDL	.	.	40.000	ILA	BDL
MAR	BDL	BDL	.	.	BDL	BDL	BDL
APR	BDL	BDL	.	.	BDL	BDL	BDL
MAY	BDL	BDL	.	.	BDL	BDL	BDL
JUN	BDL	BDL	.	.	BDL	BDL	BDL
JUL	BDL	BDL	.	.	BDL	BDL	BDL
AUG	BDL	BDL	.	.	BDL	BDL	BDL
SEP	BDL	BDL	.	.	BDL	BDL	BDL
OCT	BDL	BDL	.	.	BDL	BDL	BDL
NOV	BDL	BDL	.	.	BDL	BDL	ILA
DEC	BDL	BDL	.	.	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

	SITE	K21 RAW	HANNHEIN RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE			STANDING	FREE FLOW			
	PESTICIDES & PCB							
ATRAZINE (NG/L	)		DET'N LIMIT = 50.00		GUIDELINE = 60000 (83)			
JAN		BDL	BDL	.	BDL	BDL	210.000 <T	150.000 <T
FEB		BDL	BDL	.	BDL	BDL	BDL	BDL
MAR		BDL	BDL	.	BDL	BDL	BDL	BDL
APR		BDL	BDL	.	BDL	ILA	BDL	BDL
MAY		BDL	BDL	.	BDL	BDL	IRO	IRO
JUN		BDL	BDL	.	BDL	BDL	240.000 <T	280.000 <T
JUL		BDL	BDL	.	BDL	BDL	200.000 <T	190.000 <T
AUG		BDL	BDL	.	BDL	BDL	BDL	BDL
SEP		BDL	BDL	.	BDL	BDL	300.000 <T	200.000 <T
OCT		BDL	BDL	.	BDL	IRE	230.000 <T	230.000 <T
NOV		BDL	BDL	.	BDL	BDL	310.000 <T	230.000 <T
DEC		BDL	IRE	.	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

	SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
	TYPE		STANDING	FREE FLOW			
PHENOLICS (UG/L	PHENOLICS)		DET'N LIMIT = 0.2	GUIDELINE = 2.00 (A3)			
JAN		.600 <T	.600 <T	. .	.600 <T	.600 <T	BDL
FEB		.600 <T	.600 <T	. .	.600 <T	.600 <T	.600 <T
MAR		BDL	BDL	. .	BDL	BDL	BDL
APR		.600 <T	.600 <T	. .	.200 <T	.400 <T	.200 <T
MAY		.200 <T	.200 <T	. .	.200 <T	.200 <T	.200 <T
JUN		BDL	BDL	. .	BDL	.800 <T	1.000 <T
JUL		BDL	BDL	. .	BDL	.600 <T	.600 <T
AUG		.600 <T	.200 <T	. .	BDL	.200 <T	.600 <T
SEP		BDL	BDL	. .	BDL	BDL	BDL
OCT		BDL	BDL	. .	BDL	.600 <T	.600 <T
NOV		BDL	.200 <T	. .	INR	.200 <T	.200 <T
DEC		.600 <T	.600 <T	. .	.200 <T	.600 <T	1.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HANNHEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
VOLATILES						
BENZENE (UG/L)		DET'N LIMIT = .050	GUIDELINE = 5.0 (81)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.150 <T	.050 <T	.050 <T	BDL
APR	BDL	BDL	.100 <T	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	.050 <T	.050 <T	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.050 <T	BDL	BDL	BDL
TOLUENE (UG/L)		DET'N LIMIT = .050	GUIDELINE = 24.0 (84)			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	.300 <T	BDL	BDL
MAY	BDL	BDL	BDL	.150 UCS	BDL	BDL
JUN	BDL	BDL	BDL	.200 <T	.050 <T	.050 <T
JUL	BDL	.100 <T	.050 <T	.150 <T	BDL	BDL
AUG	BDL	BDL	BDL	.150 <T	BDL	BDL
SEP	BDL	BDL	BDL	.050 <T	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
ETHYLBENZENE (UG/L)		**DET'N LIMIT = .050**	**GUIDELINE = 2.4 (84)**			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	.050 <T	.200 <T	BDL	BDL
MAY	BDL	BDL	BDL	.150 <T	BDL	BDL
JUN	.050 <T	.100 <T	BDL	.200 <T	.150 <T	.300 <T
JUL	.100 <T	.100 <T	.050 <T	.150 <T	.200 <T	.100 <T
AUG	BDL	BDL	.050 <T	.100 <T	BDL	BDL
SEP	.100 <T	.050 <T	BDL	.150 <T	.100 <T	.050 <T
OCT	.050 <T	.100 <T	BDL	.150 <T	.050 <T	.050 <T
NOV	BDL	BDL	BDL	.100 <T	BDL	BDL
DEC	BDL	BDL	.050 <T	.100 <T	BDL	BDL
M-XYLENE (UG/L)		**DET'N LIMIT = .100**	**GUIDELINE = 300 (84)**			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	.700 <T	BDL	BDL
MAY	BDL	BDL	BDL	.500 <T	BDL	BDL
JUN	BDL	BDL	BDL	.300 <T	BDL	BDL
JUL	BDL	BDL	BDL	.200 <T	BDL	BDL
AUG	BDL	BDL	BDL	.300 <T	BDL	BDL
SEP	BDL	BDL	BDL	.200 <T	BDL	BDL
OCT	BDL	BDL	BDL	.100 <T	BDL	BDL
NOV	BDL	BDL	BDL	.200 <T	BDL	BDL
DEC	BDL	BDL	BDL	.100 <T	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
O-XYLENE (UG/L)		**DET'N LIMIT = .050**	**GUIDELINE = 300 (84)**			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	.300 <T	BDL	BDL
MAY	BDL	BDL	BDL	.150 <T	BDL	BDL
JUN	BDL	BDL	BDL	.150 <T	BDL	BDL
JUL	BDL	BDL	BDL	.100 <T	BDL	BDL
AUG	BDL	BDL	BDL	.100 <T	BDL	BDL
SEP	BDL	BDL	BDL	.100 <T	BDL	BDL
OCT	BDL	BDL	BDL	.050 <T	BDL	BDL
NOV	BDL	BDL	BDL	.100 <T	BDL	BDL
DEC	BDL	BDL	BDL	.050 <T	BDL	BDL
STYRENE (UG/L)		**DET'N LIMIT = .050**	**GUIDELINE = 46.5 (D2)**			
OCT	.400 <T	.750 UCB	.250 <T	BDL	.400 <T	.500 UCB
NOV	BDL	.200 <T	.250 <T	BDL	.200 <T	.150 <T
DEC	.100 <T	.200 <T	.350 <T	.200 <T	.200 <T	.100 <T
1,1 DICHLOROETHYLENE (UG/L)		**DET'N LIMIT = .100**	**GUIDELINE = 7.0 (D1)**			
JAN	BDL	BDL	BDL	BDL	BDL	BDL
MAR	BDL	.000 SPS	BDL	BDL	BDL	BDL
APR	BDL	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE				STANDING	FREE FLOW		
AUG	BDL	BDL	.	BDL	BDL	BDL	BDL
SEP	BDL	BDL	.	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	BDL	BDL	BDL
1,1 DICHLOROETHANE (UG/L)		DET'N LIMIT = .100		GUIDELINE = N/A			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	.900 <T	BDL	BDL	BDL
APR	BDL	BDL	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.	1.100	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	BDL	.100 <T	BDL	BDL
SEP	BDL	BDL	.	1.100	BDL	BDL	BDL
OCT	BDL	BDL	.	.700 <T	BDL	BDL	BDL
NOV	BDL	BDL	.	.200 <T	.200 <T	BDL	BDL
DEC	BDL	BDL	.	.400 <T	.100 <T	BDL	BDL
CHLOROFORM (UG/L)		DET'N LIMIT = .100		GUIDELINE = 350 (A1+)			
JAN	BDL	.300 <T	.	.200 <T	.500 <T	BDL	6.900
MAR	BDL	.400 <T	.	.400 <T	.500 <T	.100 <T	21.500
APR	BDL	BDL	.	.400 <T	1.200	BDL	12.100
MAY	BDL	.200 <T	.	.300 <T	.400 <T	BDL	8.400
JUN	BDL	BDL	.	BDL	.500 <T	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
JUL	BDL	.300 <T	.	.200 <T	.700 <T	.300 <T	4.700
AUG	.200 <T	.300 <T	.	1.100	.500 <T	.400 <T	4.200
SEP	BDL	.100 <T	.	.100 <T	1.800	BDL	3.300
OCT	.200 <T	.200 <T	.	.300 <T	.900 <T	.100 <T	3.500
NOV	BDL	BDL	.	.200 <T	1.000	BDL	8.400
DEC	BDL	.100 <T	.	.300 <T	.500 <T	BDL	11.900
111, TRICHLOROETHANE (UG/L)		DET'N LIMIT = .020		GUIDELINE = 200 (D1)			
JAN	.100 <T	BDL	.	.100 <T	1.000	BDL	BDL
MAR	BDL	BDL	.	BDL	1.040	BDL	BDL
APR	BDL	BDL	.	.080 <T	1.000	BDL	BDL
MAY	BDL	BDL	.	BDL	1.300	BDL	BDL
JUN	BDL	BDL	.	BDL	1.200	BDL	BDL
JUL	BDL	BDL	.	BDL	1.600	BDL	BDL
AUG	BDL	BDL	.	BDL	1.240	BDL	BDL
SEP	BDL	BDL	.	.060 <T	1.700	BDL	BDL
OCT	BDL	BDL	.	.100 <T	.960	BDL	BDL
NOV	BDL	BDL	.	BDL	1.600	BDL	BDL
DEC	BDL	BDL	.	BDL	1.140	BDL	BDL
CARBON TETRACHLORIDE (UG/L)		DET'N LIMIT = .200		GUIDELINE = 5.0 (D1)			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	BDL	BDL	BDL	BDL
APR	BDL	BDL	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HANNHEIM RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE			STANDING	FREE FLOW			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
JUL	BDL	BDL	.	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.	.200 <T	BDL	BDL	.200 <T
SEP	BDL	BDL	.	BDL	BDL	BDL	BDL
OCT	BDL	BDL	.	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.	BDL	BDL	BDL	BDL
TRICHLOROETHYLENE (UG/L)		DET'N LIMIT = .100		GUIDELINE = 5.0 (D1)			
JAN	BDL	BDL	.	BDL	.300 <T	BDL	BDL
MAR	BDL	BDL	.	BDL	.200 <T	BDL	BDL
APR	BDL	BDL	.	BDL	.300 <T	BDL	BDL
MAY	BDL	BDL	.	BDL	.300 <T	BDL	BDL
JUN	BDL	BDL	.	BDL	.300 <T	BDL	BDL
JUL	BDL	BDL	.	BDL	.200 <T	BDL	BDL
AUG	BDL	BDL	.	BDL	.300 <T	BDL	BDL
SEP	BDL	BDL	.	BDL	.300 <T	BDL	BDL
OCT	BDL	BDL	.	BDL	.300 <T	BDL	BDL
NOV	BDL	BDL	.	BDL	.400 <T	BDL	BDL
DEC	BDL	BDL	.	BDL	.400 <T	BDL	BDL
DICHLOROBROMOMETHANE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 350 (A1+)			
JAN	BDL	.550	.	.550	1.100	BDL	3.200
MAR	BDL	.700	.	.350 <T	1.050	.100 <T	10.800
APR	BDL	.650	.	.300 <T	2.750	BDL	6.500

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	MANNHEIN RESERVOIR		SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE				STANDING	FREE FLOW			
MAY	BDL	.400 <T	.	.250 <T	1.000	BDL	5.200
JUN	BDL	.400 <T	.	BDL	1.100	BDL	BDL
JUL	BDL	.600	.	.550	1.050	.250 <T	.800
AUG	BDL	.400 <T	.	.400 <T	1.150	BDL	.400 <T
SEP	BDL	.400 <T	.	BDL	4.500	BDL	.400 <T
OCT	BDL	.500	.	.350 <T	2.300	BDL	.650
NOV	BDL	.600 <T	.	.450 <T	2.450	BDL	3.550
DEC	BDL	.500 <T	.	.400 <T	1.000	BDL	5.500
CHLORODIBROMOMETHANE (UG/L)		DET'N LIMIT = .100		GUIDELINE = 350 (A1+)			
JAN	BDL	.900 <T	.	.900 <T	1.700	BDL	.900 <T
MAR	BDL	1.600	.	.400 <T	1.300	.100 <T	3.500
APR	BDL	1.200	.	.200 <T	5.000	BDL	2.200
MAY	BDL	.700 <T	.	.200 <T	1.400	BDL	1.800
JUN	BDL	.700 <T	.	BDL	1.500	BDL	BDL
JUL	BDL	.900 <T	.	1.000	1.500	.100 <T	.100 <T
AUG	BDL	.600 <T	.	.500 <T	2.200	BDL	BDL
SEP	BDL	1.100	.	.100 <T	8.300	BDL	BDL
OCT	BDL	1.200	.	.600 <T	5.100	BDL	.100 <T
NOV	BDL	1.400	.	.900 <T	5.100	BDL	1.000
DEC	BDL	1.100	.	.700 <T	1.700	BDL	1.300
T-CHLOROETHYLENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 10.0 (C2)			
JAN	BDL	BDL	.	BDL	BDL	BDL	BDL
MAR	BDL	BDL	.	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW	HANNEIN RESERVOIR	SITE 1	STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
APR	BDL	BDL	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	.100 <T	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL
BROMOFORM (UG/L)		DET'N LIMIT = .200	GUIDELINE = 350 (A1+)			
JAN	BDL	.600 <T	.600 <T	1.000 <T	BDL	BDL
MAR	BDL	.800 <T	BDL	1.000 <T	BDL	.200 <T
APR	BDL	.600 <T	BDL	2.000 <T	BDL	BDL
MAY	BDL	.600 <T	BDL	1.200 <T	BDL	BDL
JUN	BDL	.400 <T	BDL	1.400 <T	BDL	BDL
JUL	BDL	.600 <T	.600 <T	1.200 <T	BDL	BDL
AUG	BDL	.600 <T	.600 <T	2.400	BDL	BDL
SEP	BDL	.600 <T	BDL	4.000	BDL	BDL
OCT	BDL	.800 <T	.600 <T	2.800	BDL	BDL
NOV	BDL	1.200 <T	.800 <T	3.600	BDL	BDL
DEC	BDL	.800 <T	.600 <T	2.000 <T	BDL	BDL
TOTL TRIHALOMETHANES (UG/L)		DET'N LIMIT = .500	GUIDELINE = 350 (A1)			
JAN	BDL	2.350	2.250	4.300	BDL	11.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM KITCHENER WELL SUPPLY 1988

SITE	K21 RAW HAMMEIR RESERVOIR	SITE 1		STRANGE ST RESERVOIR	K70 RAW	K70 TREATED
TYPE		STANDING	FREE FLOW			
MAR	BDL	3.500	1.130	3.850	.300	36.000
APR	BDL	2.450 <T	.900 <T	10.950	BDL	20.800
MAY	BDL	1.900 <T	.750 <T	4.000 <T	BDL	15.400
JUN	BDL	1.600 <T	BDL	4.500 <T	BDL	BDL
JUL	BDL	2.400 <T	2.330 <T	4.450 <T	.650 <T	5.600
AUG	BDL	1.900 <T	2.600 <T	6.250	BDL	4.600
SEP	BDL	2.200 <T	BDL	18.600	BDL	3.700 <T
OCT	BDL	2.700 <T	1.650 <T	11.100	BDL	6.150 <T
NOV	BDL	3.200 <T	2.350 <T	12.150	BDL	12.950
DEC	BDL	2.500 <T	2.000 <T	9.200	BDL	18.700

Table 6

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
P/A BOTTLE		0	0 (A1*)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	MG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	MG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	MG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	MG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	MG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	MG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	MG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	MG/L	1.0	10. (C1)
HEXACHLOROETHANE	MG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	MG/L	1.000	N/A
PENTACHLOROBENZENE	MG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	MG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	MG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	MG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	MG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	MG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	MG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	MG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	MG/L	50.	5000. (B1)
PENTACHLOROPHENOL	MG/L	50.	60000. (B1)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DIMENSLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	°C	N/A	<15 °C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DIMENSIONLESS	N/A	6.5-8.5(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40(F2)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)
METALS			
ALUMINUM	UG/L	.050	100. (A4)
ANTIMONY	UG/L	.050	146. (D4)
ARSENIC	UG/L	.050	50. (A1)
BARIUM	UG/L	.020	1000. (A1)
BORON	UG/L	.200	5000. (A1)
BERYLLIUM	UG/L	.010	0.20 (H)
CADMIUM	UG/L	.050	5.0 (A1)
COBALT	UG/L	.020	1000. (H)
CHROMIUM	UG/L	.100	50. (A1)
COPPER	UG/L	.100	1000. (A3)
IRON	UG/L	5.0	300. (A3)
MERCURY	UG/L	.01	1.0 (A1)
MANGANESE	UG/L	.050	50. (A3)
MOLYBDENUM	UG/L	.020	500. (H)
NICKEL	UG/L	.100	50. (F3)
LEAD	UG/L	.020	50. (A1)
SELENIUM	UG/L	.200	10. (A1)
SILVER	UG/L	.020	50. (A1)
STRONTIUM	UG/L	.100	2000. (H)
THALLIUM	UG/L	.010	13. (D4)
TITANIUM	UG/L	.100	N/A
URANIUM	UG/L	.020	20. (A2)
VANADIUM	UG/L	.020	100. (H)
ZINC	UG/L	.020	5000. (A3)
PHENOLICS			
PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0 (A3)
PESTICIDES & PCB			
ALDRIN	NG/L	1.0	700. (A1)
AMETRINE	NG/L	50.	300000. (D3)
ATRAZINE	NG/L	50.	60000. (B3)
ALPHA HEXACHLOROCYCLOHEXANE (HHC)	NG/L	1.0	700. (G)
BETA HEXACHLOROCYCLOHEXANE (HHC)	NG/L	1.0	300. (G)
GAMMA HEXACHLOROCYCLOHEXANE(LINDANE)	NG/L	1.0	4000. (A1)
ALPHA CHLORDANE	NG/L	2.0	7000. (A1)
GAMMA CHLORDANE	NG/L	2.0	7000. (A1)
BLADEX	NG/L	100.	10000. (B3)
DIELDRIN	NG/L	2.0	700. (A1)
METHOXYCHLOR	NG/L	5.0	100000. (A1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000. (D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000. (D4)
ENDRIN	NG/L	4.0	200. (A1)
ENDOSULFAN SULPHATE(THIODAN SULPHATE)	NG/L	4.0	N/A
HEPTACHLOR EPOXIDE	NG/L	1.0	3000. (A1)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
HEPTACHLOR	NG/L	1.0	3000.	(A1)
METOLACHLOR	NG/L	500.	50000.	(B3)
MIREX	NG/L	5.0	N/A	
OXYCHLORDANE	NG/L	2.0	N/A	
O,P-DDT	NG/L	5.0	30000.	(A1)
PCB	NG/L	20.0	3000.	(A2)
O,P-DDD	NG/L	5.0	N/A	
PPDDE	NG/L	1.0	30000.	(A1)
PPDDT	NG/L	5.0	30000.	(A1)
ATRATONE	NG/L	50.	N/A	
ALACHLOR	NG/L	500.	35000.	(D2)
PROMETONE	NG/L	50.	52500.	(D3)
PROPAZINE	NG/L	50.	16000.	(D2)
PROMETRYNE	NG/L	50.	1000.	(B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000.	(B2)
SIMAZINE	NG/L	50.	10000.	(B3)
POLYAROMATIC HYDROCARBONS				
PHENANTHRENE	NG/L	10.0	N/A	
ANTHRACENE	NG/L	1.0	N/A	
FLUORANTHENE	NG/L	20.0	42000.	(D4)
PYRENE	NG/L	20.0	N/A	
BENZO(A)ANTHRACENE	NG/L	20.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A	
BENZO(E)PYRENE	NG/L	50.0	N/A	
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A	
PERYLENE	NG/L	10.0	N/A	
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A	
BENZO(A)PYRENE	NG/L	5.0	10.	(B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A	
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A	
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A	
BENZO(B)CHRYSENE	NG/L	2.0	N/A	
CORONENE	NG/L	10.0	N/A	
SPECIFIC PESTICIDES				
TOXAPHENE	NG/L	N/A	5000.	(A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	280000.	(B1)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000.	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID	NG/L	200.	18000.	(B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A	
DICAMBA	NG/L	100.	87000.	(B3)
PICHLORAM	NG/L	100.	2450000.	(D3)
SILVEX (2,4,5-TP)	NG/L	50.	10000.	(A1)
DIAZINON	NG/L	20.	14000.	(A1)
DICHLOROVOS	NG/L	20.	N/A	
DURSBAN	NG/L	20.	N/A	
ETHION	NG/L	20.	35000.	(G)
GUTHION	NG/L	N/A	N/A	
MALATHION	NG/L	20.	160000.	(G)
MEVINPHOS	NG/L	20.	N/A	
METHYL PARATHION	NG/L	50.	7000.	(B3)
METHYLTRITHION	NG/L	20.	N/A	
PARATHION	NG/L	20.	35000.	(B1)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
PHORATE (THIMET)	UG/L	20.	35. (D2)
RELDAN	UG/L	20.	N/A
RONNEL	UG/L	20.	N/A
AMINOCARB	UG/L	N/A	N/A
BENOMYL	UG/L	N/A	N/A
BUX (METALKAMATE)	UG/L	2000.	N/A
CARBOFURAN	UG/L	2000.	18000. (D3)
CICP (CHLORPROPHAM)	UG/L	2000.	350000. (G)
DIALLATE	UG/L	2000.	30000. (H)
EPTAM	UG/L	2000.	N/A
IPC	UG/L	2000.	N/A
PROPOXUR (BAYGON)	UG/L	2000.	90000. (G)
SEVIN (CARBARYL)	UG/L	200.	70000. (A1)
SUTAN (BUTYLATE)	UG/L	2000.	245000. (D3)
VOLATILES			
BENZENE	UG/L	.050	5.0 (B1)
TOLUENE	UG/L	.050	24.0 (B4)
ETHYLBENZENE	UG/L	.050	2.4 (B4)
PARA-XYLENE	UG/L	.100	300. (B4)
META-XYLENE	UG/L	.100	300. (B4)
ORTHO-XYLENE	UG/L	.050	300. (B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0 (D1)
ETHLYENE DIBROMIDE	UG/L	.05	50. (G)
METHYLENE CHLORIDE	UG/L	.500	1750. (D3)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	350. (D3)
1,1-DICHLOROETHANE	UG/L	.100	N/A
CHLOROFORM	UG/L	.100	350. (A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200. (D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0 (D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0 (D1)
1,2-DICHLOROPROPANE	UG/L	.050	10.0 (G)
TRICHLOROETHYLENE	UG/L	.100	5.0 (D1)
DICHLOROBROMOMETHANE	UG/L	.050	350. (A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350. (A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0 (C2)
BROMOFORM	UG/L	.200	350. (A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17(D4)
CHLOROBENZENE	UG/L	.100	1510. (D3)
1,4-DICHLOROBENZENE	UG/L	.100	5.0 (B1)
1,3-DICHLOROBENZENE	UG/L	.100	130. (G)
1,2-DICHLOROBENZENE	UG/L	.050	200. (B1)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A
TOTAL TRIHALOMETHANES	UG/L	.500	350. (A1)
STYRENE	UG/L	.05	46.5 (D2)